

FLIGHT

The
AIRCRAFT
ENGINEER
AND
AIRSHIPS

First Aero Weekly in the World
Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 587 (No. 13, Vol. XII.)

MARCH 25, 1920

Weekly, Price 6d.
Post Free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Office: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2

Telegrams: Truditor, Westcent, London. Telephone: Gerrard 1828

Annual Subscription Rates, Post Free:

United Kingdom .. 28s. 2d. Abroad .. 33s. 6d.*
These rates are subject to any alteration found necessary under abnormal conditions.

* European subscriptions must be remitted in British currency

CONTENTS

Editorial Comment	PAGE
Another Landmark in Flight	331
The Great Aircraft Deal	332
A Ministry of Defence	332
The First Lord on Naval Policy	334
The Grahame-White E-8 Limousine	335
The Great Aircraft Deal	337
The Royal Aero Club: Official Notices	338
Aeromarine Flying Boats at New York Show	339
The Case for the Cantilever Wing: By "Marco Polo"	342
Postage Stamps of the Air: By D. B. Armstrong	344
Aeronautical Society Notices	345
The Cairo-Cape Flight	346
The Hild-Marshonnet Sportplane	347
Airisms from the Four Winds	350
Airship Machinery	352
The Royal Air Force	354
In Parliament	355
The Navy and the Air	356

DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the date of important fixtures are invited to send particulars for inclusion in the following list:

March 31 ..	Lecture on "Radiators and Cooling Systems for Aircraft Water-Cooled Engines," by Capt. R. N. Liptrot, M.I.Ae.E., in Lecture Theatre, Royal College of Science, South Kensington, at 8 p.m.
April 7 ...	Lecture by Mr. J. L. Cope, "Aerial Survey in the Antarctic," at Central Hall, Westminster, 8 p.m.
April 18 to May 2	Seaplane Competition at Monaco
April 21 ...	Lecture on "The Commercial Future of Airships," by Air-Commr. Edward Maitland, C.M.G., D.S.O., A.F.C., at Royal Society of Arts, John Street, Adelphi, at 4.30 p.m.
May 22 and 23	Aviation Competition at Juvisy in connection with Fêtes de Paris
June 1 ...	Air Ministry Competition (Small Type Aeroplanes), Martlesham Heath
July ...	S.B.A.C. International Aero Exhibition at Olympia
July (mid.)	Seaplane Contests at Antwerp
Aug. 1 ...	Air Ministry Competition (Seaplanes), Felixstowe
Aug. (end of)	Schneider International Race, Venice.
Sept. 1 ...	Air Ministry Competition (Large Type Aeroplanes), Martlesham Heath
Sept. ...	International aviation week (with competitions) at Brescia, Italy
Sept. (end of)	Gordon-Bennett Aviation Cup, France.

EASTER HOLIDAYS

Owing to Good Friday, it will be necessary for the next issue of FLIGHT, dated April 1, to go to press earlier than usual. All copy, Editorial and Advertisement, should reach FLIGHT Offices not later than the morning of Friday, March 26.

EDITORIAL COMMENT



YET more history has been made by the successful arrival at Cape Town of Col. van Ryneveld and Capt. Brand, who are the first to have completed the journey from end to end of Africa by air. The brief story of this historic flight is that the two airmen left Brooklands for Cairo on the 4th February, and arrived at the Egyptian capital five days later. The following day they left with the intention of making a non-stop flight to Khartoum, but their machine crashed at Wady Halfa on the 11th. Returning to Cairo, they made a fresh start on the 22nd, on a new machine, fitted with the engines of the first. After encountering all sorts of climatic and other difficulties, they reached Bulawayo on the 5th March, but on the next day their machine crashed about a mile from the start, just when the goal was in sight and the worst parts of the journey had been negotiated. The Union Government sent another machine up to Bulawayo, so that the voyagers were able to resume their flight to Capetown on the 17th, and successfully completed the journey on the 20th.

As a demonstration of the power of endurance of the modern aeroplane, this voyage from England to the Cape may not be as spectacular as the Atlantic dash, or so successful as a reliability test as that from England to Australia, but it is nevertheless a most valuable addition to the lengthening list of proofs that the aeroplane is fit to rank with the older systems of travel as a reliable and efficient means of transport. Moreover, it must be remembered, when attempting to assess the respective values of these three long-distance flights, that the one which has now been so well completed was hedged about with difficulties which attended neither the Atlantic nor the Australian

enterprises. The flight across the Atlantic was a single dash, lasting some sixteen hours. It was a magnificent performance, but now it is viewed in perspective we are able to appreciate that its chief claim is historic, in that it was the pioneer flight of its kind. The flight to Australia was a much more arduous undertaking, but it must be remembered that it was carried out over a series of routes which had been flown before and on which all the conditions were known. Landing grounds and repair facilities were fairly numerous, and to that extent the flight was rendered a matter of reliability of machine and engines, backed up by good organisation and human endurance. Let it be understood that we are not for a single moment attempting to detract from the wonder of the achievements of those who so successfully completed the historic flights across the trackless Atlantic and from England to Australia. The intention is simply to compare the difficulties met with to those which Col. van Ryneveld and his companion had to encounter. The routes they had to follow have for the most part never before been flown over. The climatic conditions they had to contend with are far worse than those encountered on either of the other flights. The ground surveys of the interior of Africa are very incomplete, while the organisation for dealing with air travel is almost non-existent. It is true that something has been done to prepare the way, but arrangements are in so incomplete a state that it would be hopeless to attempt to run anything in the shape of regular services. In a word, the flight from one end of the African continent to the other was quite the "chanciest" of the three.

It was a gallant effort which deserved to succeed, and while we sympathise profoundly with the others who essayed the flight, and who have failed gloriously, there is something fitting in the fact that it is Col. van Ryneveld who has succeeded. He has gone back to South Africa to take up the post of Director of Air Services under the Minister of Defence of the Union Government, and it seems to be in the best accord with the fitness of things that he should have returned to the Union by air and that he should have been the first to do so. We most heartily congratulate him and his companion on the success of their venture, carried out as it was in face of tremendous difficulties which might well have deterred men of less pluck and determination to succeed.

The Great Aircraft Deal

In connection with the great deal whereby the whole of the Government stocks of surplus machines, engines and spares have passed into private hands for disposal, Messrs. Handley Page—who are closely associated with the deal—have issued a statement as to their objects and policy regarding the matter. It states that at the conclusion of the Armistice in November, 1918, the company turned its attention to the development of civil aviation. Subsequently there came the decision to drastically cut down the Royal Air Force, involving the handing over for disposal of increasing numbers of machines at ever-decreasing prices. The consequence of this was that it became impossible to manufacture machines at market prices which might at any moment be materially reduced. This, the statement points out, threatened the very existence of

the aircraft industry. The one solution of the difficulty thus created was to take over from the Government the whole of its surplus stock of aircraft, together with all material surplus to requirements. The statement continues: "The financial syndicate which has supplied the capital necessary for the purchase is the Aircraft Disposal Co., Ltd., but we have been appointed sole managing and selling agents, and as we are the largest subscribers to the Syndicate, the financial success of the arrangement should materially benefit the shareholders of Handley Page, Ltd. With proper commercial organisation the sale of the material should prove many times more lucrative than it would have been under the control of a Government Department, and as the Government will receive a half share of the profits, in addition to the usual taxes, the total yield to the Exchequer should be considerably higher than as if the business had remained in Government hands."

It is just as well that such a statement should have been made, because it clears up any ambiguity in the terms upon which we commented last week. Now that these terms have been thus confirmed, we are more than ever of opinion that the Government has done wisely in thus transferring the task of disposing of the huge accumulation of aircraft and engines on its hands to a private enterprise. We agree entirely with the view expressed in the Handley Page statement, that the sale of this material will "prove many times more lucrative than it would have been under the control of the Government Department." Therefore, the country, as well as the Syndicate, is to be congratulated upon the fact that in at least one direction the Government has done the right thing in liquidating its war liabilities.

A Ministry of Defence

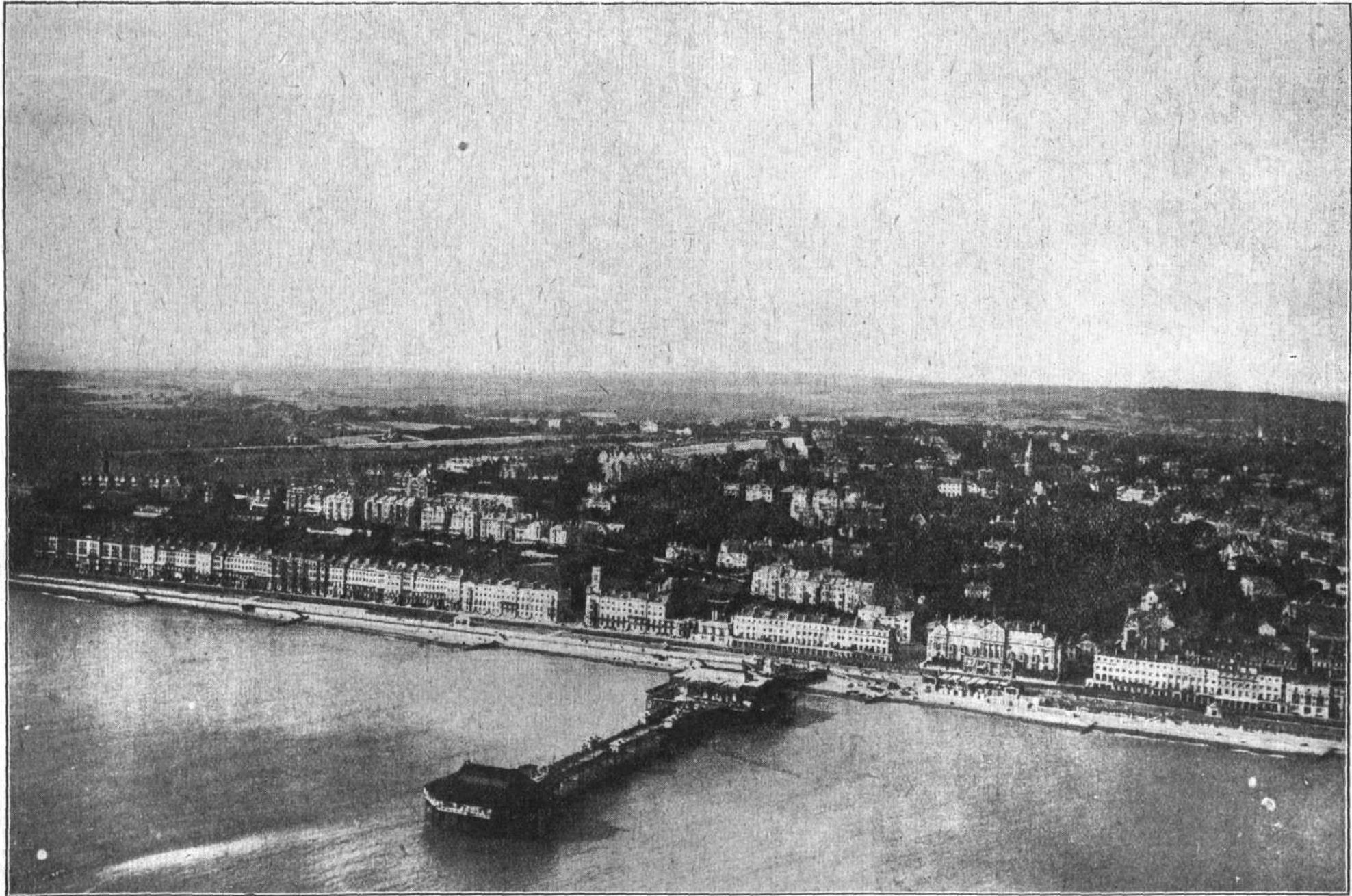
During the debate on the Naval Estimates, the idea of placing the three fighting services under a single Minister of Defence—which seems to be a pet scheme of Mr. Churchill's—came in for a rough handling. Gen. Seely described it as "foolish" to propose that one Minister should preside over the Admiralty, the Air Council and the Army Council, but spoke very strongly in favour of better co-ordination between the Services. He pleaded for the reconstitution of the Committee of Imperial Defence, armed with adequate powers, in order to ensure that there should be no further waste of men or power through any such lack of co-ordinate effort as had characterised the past.

The First Lord of the Admiralty said his Board was very greatly in favour of the Committee of Imperial Defence being set up immediately, and thought there should be a definite arrangement whereby the staffs of the three great fighting services should meet regularly and consult and work out as far as possible a common policy.

We should have considerable diffidence in pronouncing upon the merits of grouping all the Services under a single Minister of Defence. That is a question which can only be definitely decided by expert opinion after exhaustive discussion. On the face of it, it appeals to the lay mind as a retrograde policy. Surely it is imperative that the head of each service should have an undivided responsibility, though it is obviously essential that there should exist a means for ensuring a common policy and

The Camera and the 'Plane

MARCH 25, 1920



St. Leonards as viewed from an Avro aeroplane

"Flight" Copyright



the closest co-operation between the three. That should be adequately provided by such a body as the Committee of Imperial Defence, which was more or less a consultative committee and possessed no executive functions at all. As Mr. Asquith pointed out, the great desideratum is to secure elasticity in such a committee, and to secure through its deliberations, for the ultimate decision of the cabinet of the day, the fullest possible review of the ever-shifting questions of offensive or defensive policy.

There is no doubt the Committee of Imperial Defence worked excellently and performed the functions it was designed to fulfil. That there is need to still further extend its scope is obvious to those who care to read the lessons of the War, and, constituted as it should be, there does not seem to be much doubt that it fulfils the need far better than the later idea of grouping all the Services under a single head.

From the point of view of the aspiring politician, the last-named course no doubt has its attractions. Indeed, it may be conceded that it is not without its appeal even to others, but of the two we, speaking purely as laymen in these matters, prefer the other and certainly more elastic arrangement. The plurality of office now held by Mr. Churchill has not, in spite of his claim that the Air Service has not suffered as a consequence, worked so well that we can regard with complacency a still closer grouping of the fighting services.

Without going into questions with which we are not qualified to deal, it seems to us that the great danger of the single defence Ministry would be that of the possible domination of the Minister by one or other of the Services to the detriment of the others.

After all, even Ministers are human, and are swayed by friendships or by stronger personalities in directions which, were they left with unbiassed minds, their own unfettered judgment would not lead them. That may happen in each Department now, but at least the possible mischief is divided into much smaller proportions than if all the Services were under a single head and each were fighting with the Minister for the adoption of its own views.

The more we think it over, the stronger becomes the conviction that we shall do best to leave well alone.

The Air-War History

In a written answer on March 18, Mr. Stanley Baldwin, Financial Secretary to the Treasury, stated that it was not possible to estimate with accuracy the total cost of the official histories of the War, when completed, particularly as the staff engaged in this connection are also employed on other duties, but "with considerable reserve" he gave certain figures, including "Air History £10,000."

An Airship Service to Norway

ON Saturday last the three rigid airships, R 32, R 33 and R 34, cruised from Pulham to Howden aerodrome, Hull, which it is hoped will become the starting-point of a commercial airship service to Scandinavia and Holland. The R 32—a modified form of the R 31—is a wooden-framed airship, built by Messrs. Short Brothers, and is equipped with five engines, each of 300 h.p., as against the same number of engines of 275 h.p. each in the R 33 and R 34. The R 33, it may be recalled, was built by Messrs. Armstrong, Whitworth, Ltd., and the R 34 by Messrs. Beardmore, on the Clyde.

The First Lord on Naval Policy

Appended to the Naval Estimates, recently presented to Parliament, are some exceedingly interesting "Notes on Naval Policy." We need not follow them through their whole text, but there are some notes on the Navy and the air which make quite satisfactory reading. For some time we have felt that the War Office has had designs on the Air Force, and that the reactionaries have been busy intriguing to get things back to the stage they were in prior to April, 1918, when the Air Force was constituted as a separate Service. To a lesser degree the same feeling has existed regarding the Admiralty, and it is reassuring, therefore, to read Mr. Long's Note on the subject. He lays emphasis on the fact that the Admiralty in no way contemplate a return to a separate Naval Air Service. It is recognised that the Air Ministry was created by Parliament as a result of war experience, and that to separate entirely from the Air Ministry that part dealing with the Navy would be to retard progress and result in a weakening both in development of material and the training of an air personnel. The Admiralty have represented to the Air Council that in their opinion (a) the operations of all aircraft flown from H.M. ships and vessels, with whatever object in view, that is to say, not only reconnaissance and artillery observation machines, but also machines which are carrying out operations in the air for offensive and defensive purposes, and (b) all operations carried out by aircraft not flown from ships, but which are being carried out in connection with the command of the sea, that is to say, operations for oversea reconnaissance and for the attack of enemy ships and vessels, should be under naval control. Dual control would be unworkable.

We are right glad to see these views so set forth. We are glad, in the first place, to learn in such decided terms, that there is no intention to revert to the bad old system of a divided Air Service. Also, we most fully endorse the opinion of the First Lord that any scheme of dual control of operations would be bad and unworkable. FLIGHT has always insisted that for operational purposes units of the Air Force operating in the assistance of armies or fleets must be, for purposes of military command, under the superior military or naval authority. It is a point that scarcely admits of argument, and it is well that the Lords Commissioners have made their views and position thus clear.

Fast Flying in Italy

SOME fast journeys have recently been made by the 750 h.p. Fiat-engined A.R.F. biplane, piloted by Lieut. Brack-Papa. It covered the 388 miles from Rome to Turin in 2 hours 15 mins., averaging 172 m.p.h. The machine carried two passengers, one being Gabriel d'Annunzio. On the 22nd it flew the 155 miles from Rome to Naples in 47 mins. Again two passengers were carried.

Flight from Tokyo to Seoul

Two Sopwith machines and one Salmson, piloted by Japanese military officers, who have been instructed by French officers, have recently succeeded in flying from Tokyo to Seoul in Korea. The flight was commenced on March 8 by five pilots, but one Sopwith and one Salmson had forced landings on the way.

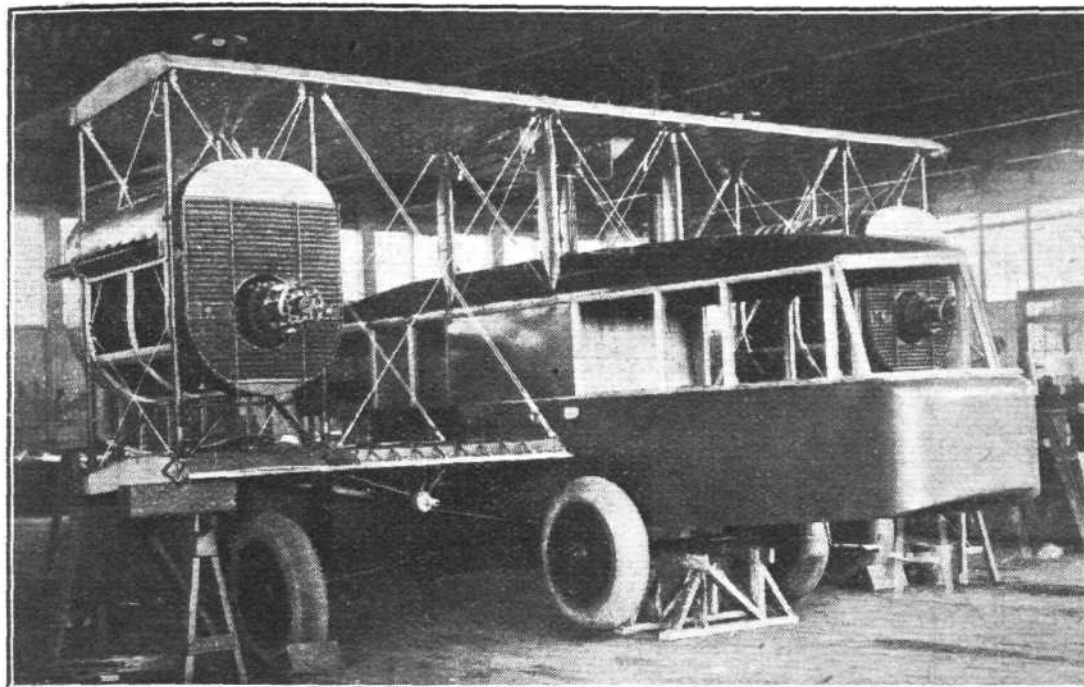
M. Poulet at Moulmein

ARRIVING at Singapore on March 12, M. Poulet proceeded at once to Moulmein in order to get his machine in going order, so as to continue his flight to Australia.

THE GRAHAME-WHITE E-8 NINE-SEATER LIMOUSINE

SINCE the description of the Grahame-White four-seater limousine appeared in *FLIGHT* for September 11, 1919, another model has been designed, and is now practically "ready for the air." Except for certain modifications in the *fuselage* necessitated by the extra seating accommodation provided, and in one or two detail improvements resulting from practical experience with the four-seater, this new model—the E-8—is identical in general design and construction to the

to be found in the *fuselage*. As before, it is built-up in two main sections, that aft of the main planes being of wire-braced girder construction with square section *longerons* and channel section struts. From the main planes forward the *fuselage*—the "business portion"—is built-up on hoop formers of ash reinforced with three-ply covering. The rounded nose is now of sheet metal, which enables a much neater job to be made of this part than when it was of three-

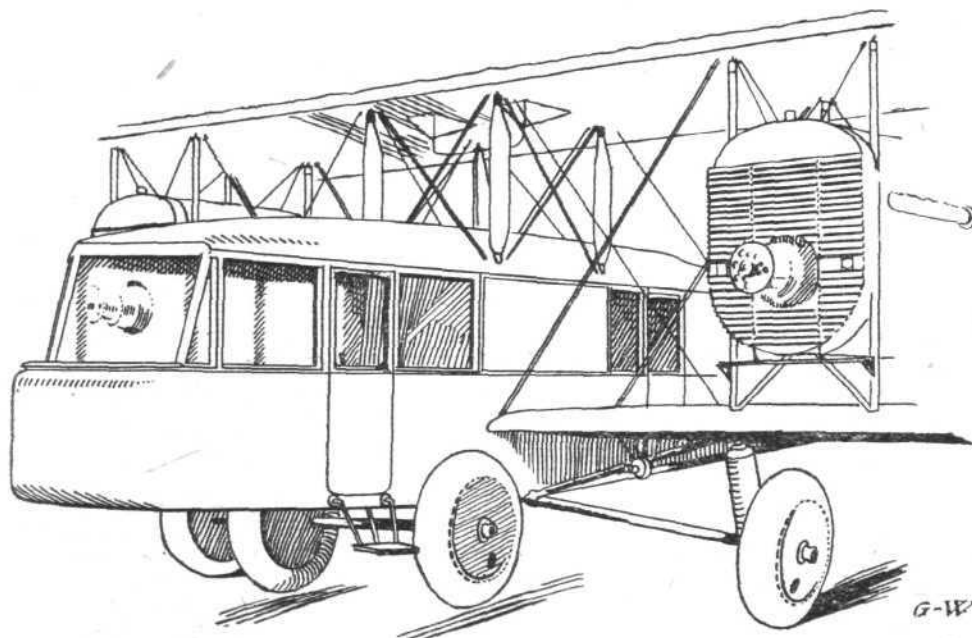


The Grahame-White E-8 nine-seater Limousine, A view of the centre portion, showing the Rolls-Royce engines, cabin, landing-chassis, etc.

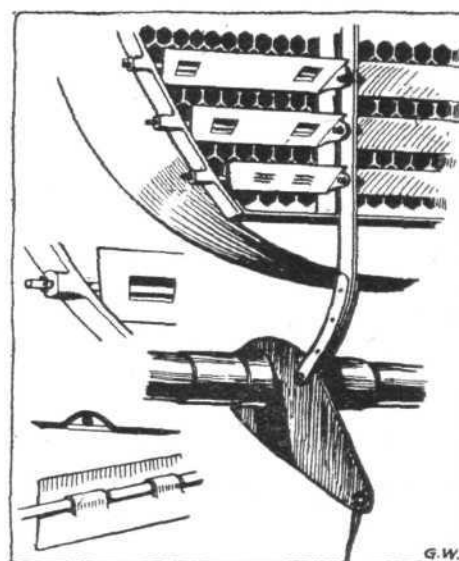
first machine. We do not, therefore, propose giving a full description of the new nine-seater, but will confine our remarks to the general characteristics of the machine and the new features, which, together with the accompanying scale drawings, should suffice to give all the essential information.

The E-8, we understand from the Grahame-White Co., is primarily a luxury machine, and not a low-priced com-

ply. The main passengers' cabin projects forward of the main planes, and is now 2 ft. 6 ins. longer on account of the extra accommodation. The interior finish and furnishing are as before, likewise the arrangement of the large Triplex windows. The middle portion of the cabin, at the main planes, is reserved for the fuel tanks. At the extreme rear of the cabin is a small compartment which can be used



A sketch showing the general arrangement of the cabins of the Grahame-White limousine



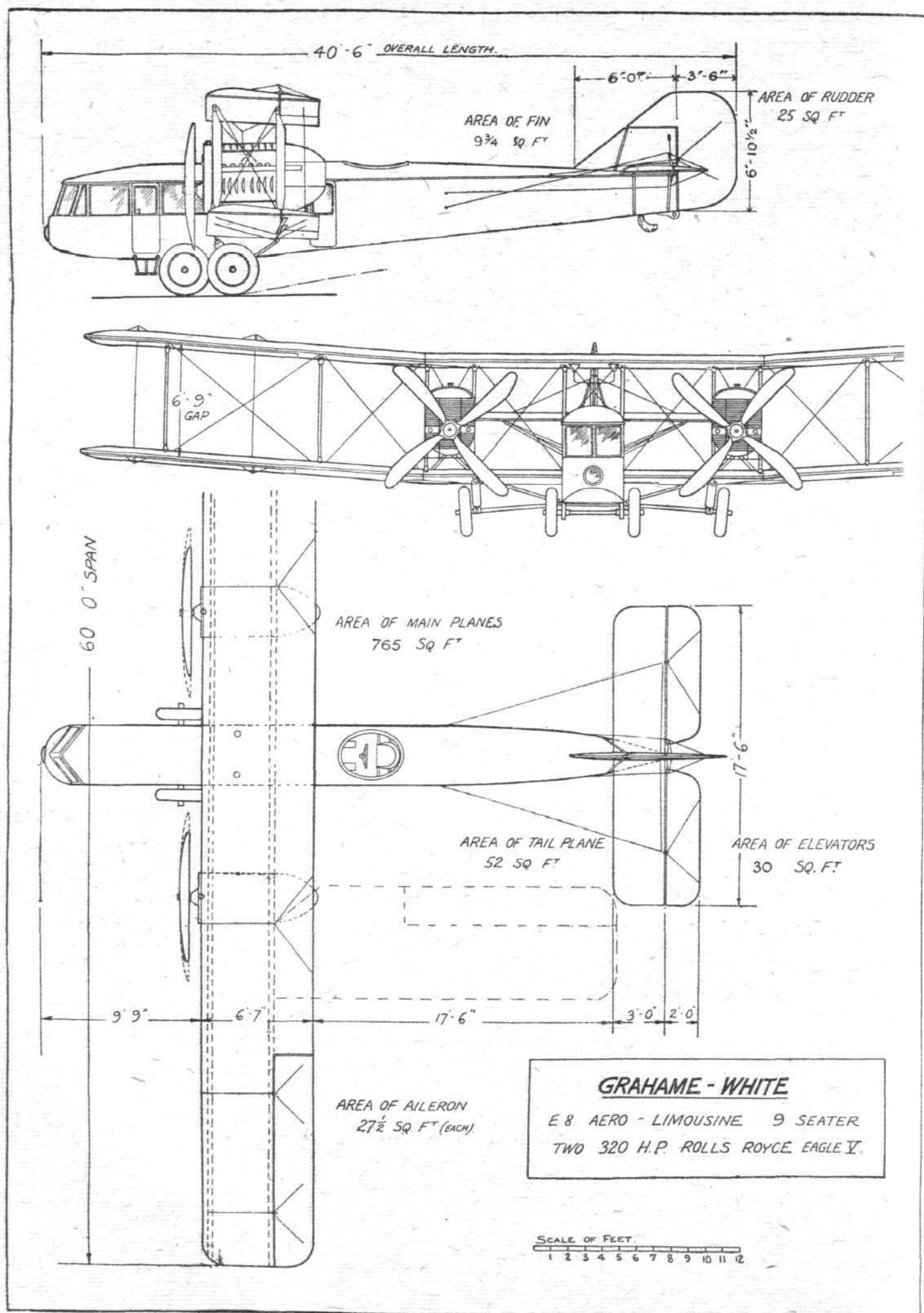
The adjustable shutter on the radiator of the Grahame-White limousine

mercial one—that is, it is comparable to the costly touring car or yacht, the best material and workmanship obtaining throughout, and finish not being sacrificed to other considerations. Whether the time is ripe for such a machine remains to be seen; one thing is certain, however, such an aeroplane *will* be wanted sooner or later, and the Grahame-White Co. are determined to be ready.

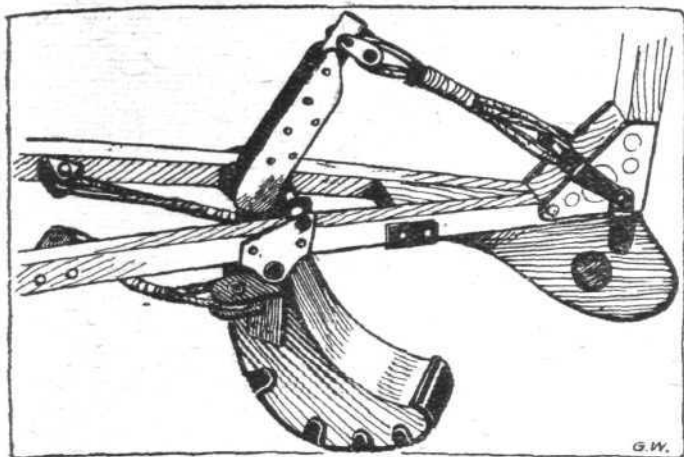
As previously stated, the main alterations in the E-8 are

either for luggage or for two passengers. This cabin has two windows each side, and a door on the port side.

The pilot, in the E-8, is located further back, the cockpit being immediately behind the cabin and the main planes, instead of, as before, underneath the top plane. The "conning tower" arrangement has been dispensed with, and an ordinary small wind-screen provided instead. Whilst the fore portion of the *fuselage* has been lengthened, the rear



THE GRAHAME-WHITE E-8 NINE-SEATER LIMOUSINE : Plan, side and front elevations to scale



A sketch of the tail-skid on the Grahame-White limousine

THE GREAT AIRCRAFT DEAL

SOME further details are now available regarding the deal by which the whole of the Aircraft Disposal Department has passed from public control into private hands, a statement setting forth the position having been issued on March 19 by Messrs. Handley Page, Ltd. This statement says:—

"Immediately on the cessation of hostilities at the end of 1918 we turned our attention to the development of aviation for commercial purposes. An order was accepted and executed for the manufacture of passenger-carrying machines for a foreign Government and similar machines were manufactured in addition at our own expense for use on Continental Air Services and by air-transport companies which we had established in India, South Africa and elsewhere. Bombing machines were also purchased by us at full war prices and adapted for passenger carrying.

"Then came the Government decision for the drastic reduction of the Royal Air Force which involved the handing over for disposal of increasing quantities of machines at ever-decreasing prices. This made it prohibitive to manufacture aircraft and unwise to purchase surplus machines at market prices which might at any moment be radically reduced.

"This state of affairs threatened the very existence of the aviation industry, and the one solution to the difficulty was to take over from the Government the whole of its surplus stock of aircraft, together with all material which they might find in the future to be surplus to their requirements. With influential financial assistance this arrangement has been successfully negotiated, but it is only fair to state that in its inception and execution the task has been mainly the work of Handley Page, Ltd.

"The financial syndicate which has supplied the capital necessary for the purchase is the Aircraft Disposal Company, Ltd., but we have been appointed the sole managing and selling agents, and as we are also the largest subscribers to the syndicate the financial success of the arrangement should materially benefit the shareholders of Handley Page, Ltd. With proper commercial organisation the sale of the material should prove many times more lucrative than it would have been under the control of a Government Department, and as the Government will receive a half-share of the profits in addition to the usual taxes the total yield to the Exchequer should be considerably larger than if the business had remained in Government hands.

"Although the undertaking of this agency means much additional work we shall still pursue our normal business as aeronautical engineers, and the individuality and constitution of Handley Page, Ltd., will remain unchanged. It is the

portion, from the trailing edge of the main planes rearward, has been shortened by 1 ft.; the overall length is, nevertheless, 1 ft. 6 ins. longer.

There is no material difference in the main planes, the overall dimensions being as before. The tail plane is a little shorter in span, and has undergone slight modifications in the angle of incidence adjustment gear. The leading edge is now fixed, and the rear spar is raised or lowered. The fin area has been reduced by 2 sq. ft. or so, but otherwise the tail surfaces remain much the same.

Except that it is slightly more springy, the landing chassis is similar to the previous one, the results obtained from the first model having been highly satisfactory.

The power plant is also similar, consisting of two 320 h.p. Rolls-Royce Eagle V engines, driving tractor screws.

As before, the principal feature of the control is in the novel arrangement of the rudder-bar, which is mounted below the floor with its pedals projecting through, and sliding in slots in, the floor-boards. The engine-controls are mounted on the right-hand side of the pilot's cockpit. An interconnected throttle-lever is fitted, which opens and closes both throttles in unison or independently.

policy of the syndicate, moreover, that their stocks shall be disposed of equitably and impartially in the interests of all British aircraft firms.

"We propose to stabilise the aircraft market by issuing a price list fixed and definite for all purchasers, and on these prices a rebate will be given to all British aircraft manufacturers and British merchant firms dealing in aircraft. A further fixed rebate will also be given to those aircraft firms who desire to purchase back any of the machines of their own design originally supplied by them to the Government.

"Owing to the existence of these stocks, the aircraft industry has to face a period when little manufacturing will be required, but the modifying and renovating of the Government aircraft means much work for the industry. We hope that British firms will participate in this by contracting to the syndicate if possible for all this work and co-operate with us in establishing beyond question the supremacy of British aircraft in the world's markets.

"The use of aircraft during the War demonstrated the possibility of aviation, but the world has still to be educated in its use as an everyday mode of transport. Owing to the large supply of machines at low prices, the opportunity to do this and firmly to establish aerial transport on a commercial basis has now come; and with wise organisation and sound finance the aircraft industry may look forward to a period of great prosperity."

The 10,000 machines taken over include Vickers-Vimy, D.H. 10, D.H. 9, D.H. 9A, D.H. 6, Sopwith Pup, Camel, Dolphin and Snipe; the Avro 504K; Bristol Fighter; Martinsyde, the Government-designed machines S.E. 5, F.E. 2B, B.E. 2E, and a few Handley Page 0.400 two-engine aeroplanes fitted with Rolls-Royce or Liberty engines. In addition there are large and small flying-boats of the F., H., and N.T. types. The 35,000 engines include Rolls-Royce Eagles and Falcons; Napier Lions; Siddeley Pumas; Wolseley Vipers and Adders; French 200 and 300 h.p. Hispano-Suiza's; Curtis; Renault; R.A.F.; Fiat; Anzani; A.B.C.; Le Rhone; Clerget; B.R. 2; Monosoupape, etc., as well as an immense quantity of engine and aeroplane spares, hangars, etc.

The greater part of this stock is absolutely new and has never been used. A very large number of the machines and engines have been delivered quite recently direct to the depots from the makers.

Before any of the machines are despatched by Handley Page, Ltd., they will be subjected to a very thorough inspection by their experts so as to ensure every machine, engine or part sold being in perfect working condition.

Presentation to Sir Richard Glazebrook

SIR RICHARD GLAZEBROOK, late Director of the National Physical Laboratory at Teddington, was on March 17 presented by the staff with his portrait in oils, painted by his cousin, Mr. Hugh de T. Glazebrook. Accompanying the gift was an album containing an illuminated address followed by the signatures of past and present members of the staff and a photograph of the Laboratory taken from an aeroplane.

Mr. F. E. Smith, F.R.S., presided, and Dr. T. E. Stanton made the presentation.

Sir Richard Glazebrook thanked the staff for their gift, and, speaking of the future of the Laboratory, said he was sure Mr. Balfour and the members of the council had its interests very seriously at heart, and would do all they could in the future to promote its prosperity. There was an intention on the part of the Ministry to carry on the study of aeronautics, which had been an important feature in the work of the Laboratory in the past, and he hoped that place would be made one of the centres where research work would be continued.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ANNUAL GENERAL MEETING

THE Annual General Meeting will be held at the Club Premises, 3, Clifford Street, London, W., on Tuesday, March 30, 1920, at 6 o'clock.

AGENDA

1. Chairman's Report.
2. Election of Committee.

The following Members have been nominated for the nine vacancies on the Committee:—

Brig.-Gen. The Duke of Atholl, K.T., M.V.O., D.S.O.
Maj.-Gen. Sir Sefton Brancker, K.C.B.
Mr. Ernest C. Bucknall.
Mr. G. B. Cockburn.
Col. F. Lindsay Lloyd, C.M.G., C.B.E.
Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P.

Lieut.-Col. Mervyn O'Gorman, C.B.

Group-Capt. C. R. Samson, C.M.G., D.S.O., R.A.F.

Mr. A. Mortimer Singer.

The number of candidates nominated for election to the Committee not exceeding the number of vacancies, no ballot paper is being issued.

3. To elect Vice-President and Council for the ensuing year.

Notice

In order to facilitate the re-decorating of the Club Premises, the Dining Room and Bedrooms will be closed from Good Friday, April 2, to Easter Monday, April 5, 1920, inclusive.

Offices: THE ROYAL AERO CLUB,

3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

R.A.F. CADETSHIPS ENTRANCE EXAMINATION

THE Air Ministry announces that a Royal Air Force Cadet College Entrance Examination will be held on June 22, 1920, and following days.

A number of cadetships at the Royal Air Force College will be open to competition at this examination. This number will not be less than 25, inclusive of King's Cadets, King's India Cadets and Honorary King's Cadets, and will include the award of two prize cadetships.

Candidates must have attained the age of 17½ and not have attained the age of 19 on July 1, 1920, the only exception being in the case of a candidate who—

(a) Was serving on January 1, 1920 (or who had served prior to that date), in the Royal Navy, Royal Marines, Regular Army, Royal Air Force, Special Reserve, Indian Army Reserve of Officers, Militia, Territorial Force, or in the Forces of the Overseas Dominions; or

(b) Was serving on March 1, 1919 (or who had served

prior to that date), in the Senior Division of the Officers Training Corps: and who, in addition to fulfilling the above conditions, is recommended by his commanding officer as suitable in all respects for appointment to a permanent commission in the Royal Air Force, in which case the upper limit of age will be 21.

Candidates must apply in writing to the Civil Service Commission, Burlington Gardens, London, W. 1, for forms of application, and the forms should be completed and forwarded to the Secretary, Civil Service Commission, not later than May 6 next. No application received later than May 20 will be accepted under any circumstances.

The competition will be conducted in accordance with the Provisional Regulations for the Royal Air Force (Cadet) College (F.S. Publication 121), which may be obtained from His Majesty's Stationery Office, Imperial House, Kingsway, W.C. 2.

"THE THEORY AND PRACTICE OF AEROPLANE DESIGN"

THERE has been no lack of text-books dealing with the theory and practice of aeroplane design, but a great many of them have been marred by errors resulting from either careless or too hasty compilation, or by neglect of proof-reading, which is as important—especially where technical works are concerned—as the actual writing in the first instance. It is largely as a consequence of this failing that many of the volumes which have been produced have not attained that success which undoubtedly awaits a really sound and reliable text-book. So far, one of the best which has come to hand is that which has been written by Mr. S. T. G. Andrews, B.Sc., and Mr. S. F. Benson, B.Sc., for Messrs. Chapman and Hall's "Directly Useful" series. Not only have they taken very great pains themselves to keep their writing free from error, but in their endeavour to ensure absolute accuracy they have had the proofs read by three highly-qualified experts. The authors set themselves the task of writing a book which should be found really useful by designers, aeronautical draughtsmen and students, and they appear to have achieved their purpose admirably. Not only so, but they have produced a work which contains a very great deal of interest to the general reader. The plan of the book is a logical one, the first chapter dealing with "principles of design," while the succeeding chapters treat of the materials

of design; the properties of aerofoils; stresses and strains in aeroplane components; design of wings; resistance and streamlining; design of the fuselage; the chassis; the air-screw; stability; control surfaces; performance, and so to the thirteenth chapter, on "the general lay-out of machines," in which the actual process of designing a machine is outlined. The book concludes with a chapter summarising the general trend of aeroplane design and a useful diagram illustrating aeroplane nomenclature.

While the authors have succeeded admirably in setting forth their information in simple and easily understood language, they have recognised the helpfulness of sketches, diagrams and illustrative examples to those making practical use of the text-book, and they have, therefore, not stinted these aids to acquiring knowledge, many of the sketches showing constructional methods, etc., being culled from the pages of FLIGHT.

As we have indicated above, the book is one which should find its place on the bookshelf of those who are taking up the study of aeroplane design. In view of the constant use to which it will be put, we are glad to notice that it is printed on good paper, and strongly bound. The book is published by Messrs. Chapman and Hall at 15s. 6d. net., and it can be obtained from FLIGHT offices at 16s. post free.

Prince Albert in Downing Street

PRINCE ALBERT, attended by Flight-Commander Louis Greig, lunched with the Prime Minister at 10, Downing Street on March 18. There were also present Capt. Guest, Air-Marshal Sir Hugh Trenchard, Sir Robert Horne, and Sir P. Sassoon.

R.A.F. Commands Combined

THE two R.A.F. area commands—Northern and Southern—will be combined as from April 1 under the title "Inland Area" command, with headquarters at Hillingdon House, Uxbridge. Air Vice-Marshal Sir J. M. Salmond, K.C.B.,

C.M.G., D.S.O., C.V.O., now in charge of the Southern Area, will command the Inland Area.

Australian Flyers in India

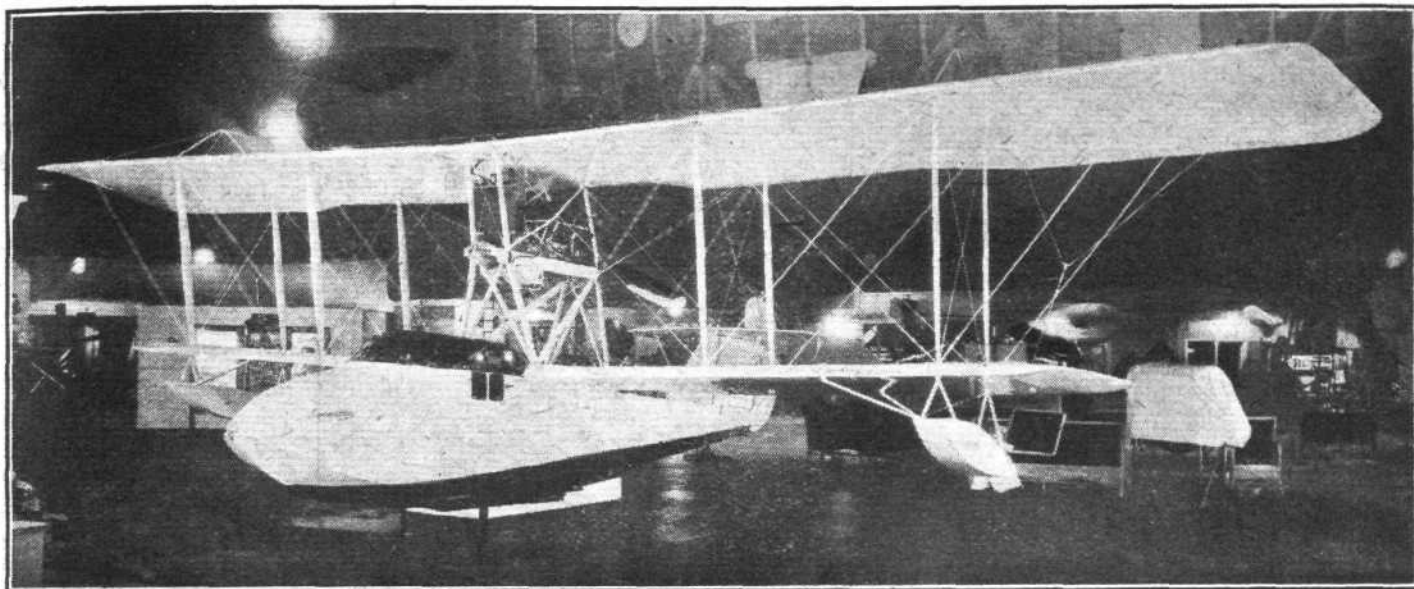
LIEUTS. MACINTOSH AND PARER on their Airco machine reached Karachi on March 8 and reported having met with frequent sandstorms on the flight from Chahbar between Karachi and Bandar Abbas. They were at Allahabad on the 12th, and Calcutta on the 14th. Capt. Matthews, having flown to Delhi on his Sopwith Wallaby, has been detained there with a broken propeller.

AEROMARINE FLYING BOATS AT THE NEW YORK AERO SHOW

If the Aeromarine Plane and Motor Co., of Keyport, N. J., was kept busy producing aircraft and aero engines during the War, the arrival of peace would appear to have made little difference in the activities of this firm—except that their output is now for peaceful purposes. With the experience gained in the manufacture of 300 naval seaplanes and flying boats, the engineers of the company, Charles F. Willard and

York Aero Show, when it created considerable interest, and we are able this week to give a few particulars and an illustration of this machine.

The aeromarine limousine is a three-seater pusher flying boat with a speed of 75 m.p.h. The pilot sits in front, with the two passengers seated side by side immediately behind. Over all three is built up a cabin, the roof of which rises in a

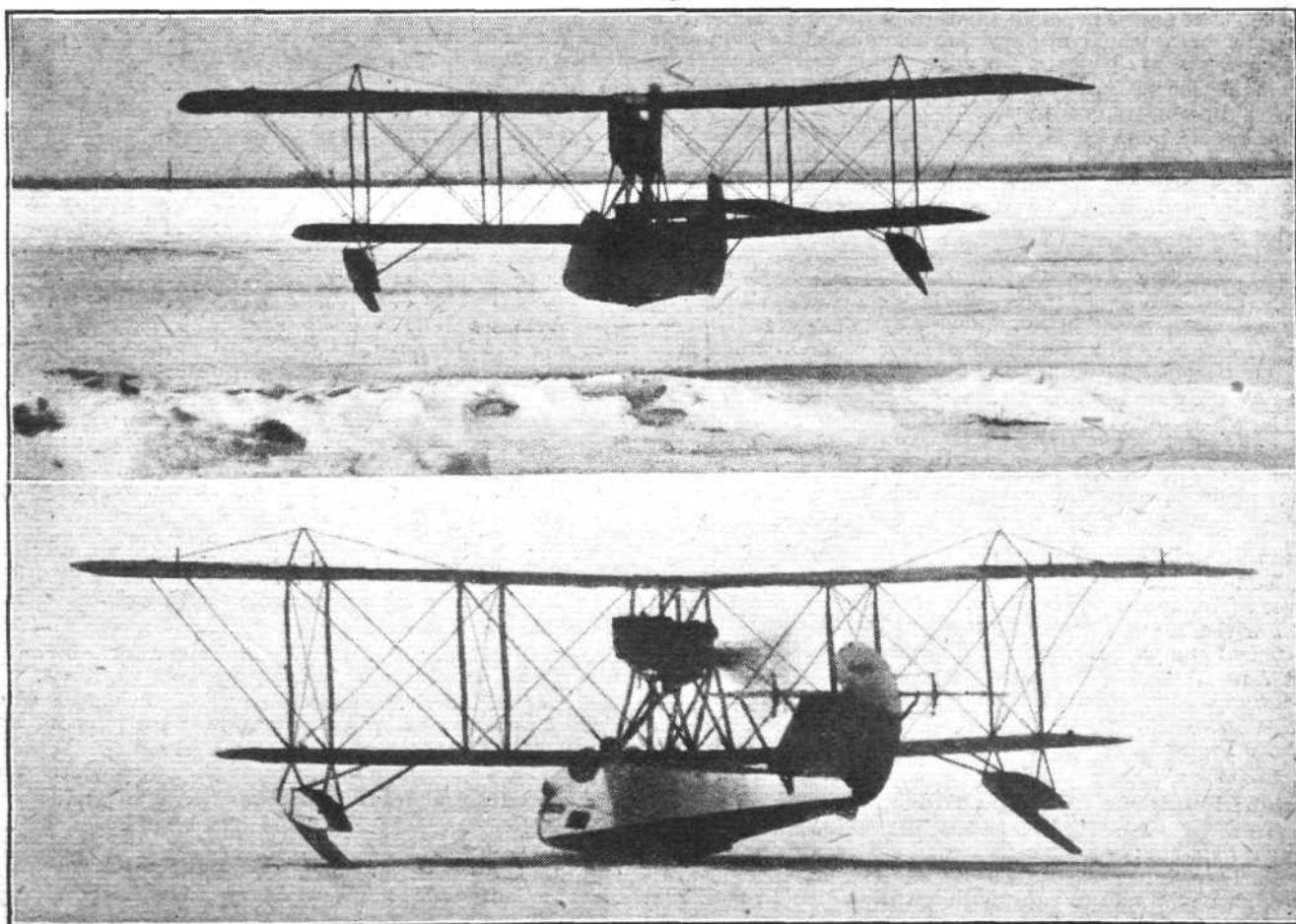


The Aeromarine " 50 B-2 " three-seater limousine flying boat.

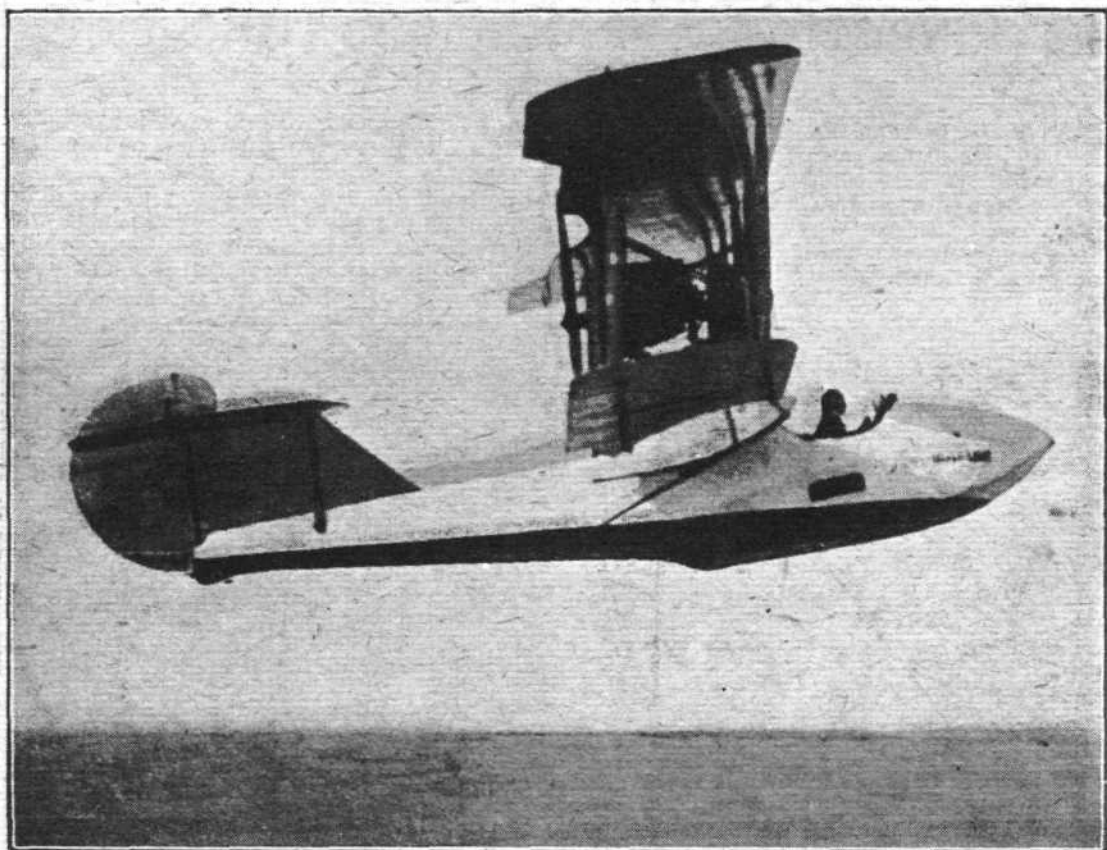
Paul G. Zimmermann, have made considerable progress in the theoretical and practical work of the past 16 months, resulting in the creation of several new types of commercial and sporting flying boats. One of these machines, the 50 B-2 "Limousine" flying boat, was exhibited at the New

York Aero Show, when it created considerable interest, and we are able this week to give a few particulars and an illustration of this machine.

The cabin is handsomely finished in blue leather and polished mahogany, giving one the impression of being in a



Two views of an " Aeromarine " (U.S.A.) type 40-c. flying boat landing on the frozen surface of Raritan Bay, N.J.



An "Aero-marine" type 40-c. flying boat in flight, after taking off from the frozen surface of Raritan Bay, N.J.

beautiful sedan. The upholstery, the furnishings, the compartments and draws lining the sides of the cabin, and the numerous little comforts provided, all go to make the aerial tourist feel that in changing over from the road to the air he has gained not only speed and novel ever-changing scenery, but luxury and comfort as well. Access to the cabin is by means of wide watertight doors.

One feature of the aeromarine limousine calling for special attention is the elimination of the usual array of control wires and pulleys, etc., from around the control column and rudder bar. A special invention of the Aeromarine Co. renders this possible, the *ailerons* being operated from the control wheel by a single tube, whilst the rudder bar communicates its motion to a duplicate bar beneath the floor. This arrangement not only makes for neatness, but prevents the risk of coats or other articles jamming the controls.

The engine installed is an eight-cylindrical V, developing 150 h.p., built in the Aeromarine factory and known as the B-8. It is mounted between the wings some distance behind the cabin, and drives direct a pusher air screw. A self-starter is fitted, and a windmill pump forces petrol from the main tank, located in the hull behind the cabin, to a small service tank in the top plane.

For those who prefer to be snug inside a cabin in winter or bad weather and out in the air when summer breezes blow, the Aeromarine Co. has devised another "ship" which may best be described by calling it the touring car of the air. In this type the pilot sits alone in a cockpit in the bow of the boat. In a larger opening behind him two passengers sit side by side. They are protected, like the pilot, by a windshield, but the cockpit may at any time be completely enclosed and made proof against wind and water by the use of a removable

celluloid top. This plane, too, is most carefully finished as well as most carefully constructed. There is no roughness or crudity such as marked the first planes. An electric self-starter is also used on this model.

The principal characteristics of the Aeromarine 50 B-2 are as follows:—

Span (top)	48 ft. 6 ins.
Span (lower)	37 ft. 8 ins.
Chord (both)	6 ft. 3 ins.
Gap	6 ft. 6 ins.
Stagger	1 ft.
Dihedral angle	17°
Angle of incidence (top)	4° 20'
Angle of incidence (lower)	3°
Decalage	1° 30'
Wing section	R.A.F. 6.
Overall length	28 ft. 11 ³ / ₁₆ ins.
Overall height	12 ft. 7 ins.
Area, top plane	304 sq. ft.
Area, lower plane	200 sq. ft.
Area, <i>ailerons</i> (two)	58 sq. ft.
Area, <i>elevators</i> (two)	25 sq. ft.
Area, tail plane	39 sq. ft.
Area, rudder	17.5 sq. ft.
Area, fin	15 sq. ft.
Weight fully loaded	3,225 lbs.
Useful load	245 lbs.
Loading per h.p.	23.8 lbs.
Loading per sq. ft.	6.15 lbs.
Speed range	44-75 m.p.h.
Climb in 10 mins.	2,200 ft.
Range of action	3 ¹ / ₂ hours, or 250 miles.

London-Paris Aerial Route

THE Air Ministry has issued the following Notice to Airmen (No. 27):—

"For the use of aviators on the London-Paris aerial route, oil, petrol and water supplies are now available at St. Inglevert Aerodrome. A handling party is also stationed on this aerodrome, but there are no hangars or sheds, and no repairs can be executed.

"St. Inglevert is approximately E. by N. 7 miles, from Cape Griz Nez."

Aerial Lighthouse at Biggin Hill

THE Air Ministry has issued the following Notice to Airmen (No. 26):—

"Further to assist airmen flying on the London-Paris route, an experimental lighthouse has been erected at Biggin Hill Aerodrome. This lighthouse is in operation every evening from half-an-hour before sunset to two hours after sunset. It gives two flashes every eight seconds, thus:—Flash one

second; Eclipse one second; Flash one second; Eclipse five seconds. Biggin Hill Aerodrome is in a position 108° 7 miles from Croydon Aerodrome, and 117° 20 miles from Hounslow Aerodrome."

Pay of R.A.F. Officers While Prisoners of War

IN an answer to Col. Yate, on March 16, Sir A. Williamson gave a table showing the pay and allowances of officers whilst prisoners of War. The table is too long for inclusion in FLIGHT, but those who are interested can obtain particulars in the House of Commons debates No. 26 for March 16, 1920.

Greatcoats for R.A.F. Officers

A MEMORANDUM (D/36964) has been issued by the Air Ministry of a Greatcoat for R.A.F. officers, which has been approved by H.M. the King. A sample of the approved cloth has been forwarded to manufacturers, merchants, and chambers of commerce and a pattern of the garment can be seen on application to Room 177, Air Ministry, Empire House, Kingsway, W.C. 2.

THE RESIGNATION OF MR. HOLT THOMAS

ELSEWHERE in this issue we have commented upon the resignation of Mr. G. Holt Thomas from the Chairmanship of the Aircraft Manufacturing Co., Ltd. Mr. Thomas, who is, as our readers are fully aware, one of the pioneers of British aviation, has given the following explanation of his resignation:—

"By the amalgamation recently announced, the Birmingham Small Arms, Ltd., acquired control of my companies. Their interest naturally lies in the large factories, which although created for aircraft, are adapted for other productions, such as motor bodies and engineering works; and equally naturally the first step is to foster these productions, and cut down all expense which is not likely to prove remunerative in the near future.

"Could I honestly advise my co-directors, in view of the present apathetic attitude of the Government, to continue an expensive technical department devoted to the design of aircraft? I was, therefore, in the position of not being, as a business man, able to advise them to continue, while I could not, from the national point of view, regard the disintegration of a staff which has proved itself second to none in the world without considerable misgivings. I therefore came to the conclusion that the only step, and the right one, was to leave them free to decide, without any views, for or against, expressed by me.

"The Airco and De Havilland design was adopted by the Government for a very large proportion of the machines used during the War. They were adopted almost entirely by the United States Flying Corps, and are responsible for the successful mail services now being run in America, which carried over 230,000 lbs. of mails in the twelve months ending June last, and are conveying much more to-day. The form of design and factory equipment were described, and, I believe, rightly described, by Lord Cowdray in the capacity of our first Air Minister, as a 'national asset.'

"For eighteen months no encouragement whatever has been given, and so far as I am aware there is no prospect or guarantee that the Airco will have orders for experimental machines, say, for £100,000, a sum sufficient to keep the staff together in the next twelve months.

"Fundamentally, the utter failure of the authorities to view in the proper proportion the importance of the air as compared with the Navy and Army, is at the root of the matter. Minister after Minister has publicly stated that 'we must retain our lead.' We are far from doing so. It must be remembered that this is a new science. It is still in its infancy. It must be kept going, and we must maintain our position. The designers' firms are not many, and quite apart from ordinary aeroplanes in quantity, which could not be expected, £1,000,000 a year, spent on experimental machines, with orders distributed among such firms, would be a national insurance, and would maintain the technical staffs.

"Every man in the street knows that if we are to be attacked again it will be by aerial invasion. Neither Fleet nor Army can raise a finger to prevent it. Other countries are, from a national security point of view, supporting construction, design, pilots, mechanics and aviation generally by direct encouragement of civil aviation.

"I am immensely proud of the success of the air service. I have been congratulated by every one. I am told that it has done more to encourage civil aviation in every country in the world except Great Britain than anything else. It has proved, firstly, that under the most difficult conditions that exist it can be done with sufficient efficiency to be practical; secondly, that the charge for the services rendered is essentially commercial.

"The French Government pays a subsidy almost amounting to the cost to a French machine flying to London and back. The American Government is establishing air mails everywhere. The British Government pays nothing, and the Air Minister states that civil aviation must fly by itself. I cannot imagine the London-Paris Air Mail ceasing to exist. It is

unthinkable that this and the Airco design should disappear, but I resigned because I could not, as a business man, see my way to advise my co-directors to continue under existing conditions."

Following Mr. Holt Thomas's resignation, Maj.-Gen. Sir S. Brancker, a director of the Aircraft Manufacturing Co., Ltd., in an interview upon the subject has stated that the Government realised the seriousness of the position, but took a considerable time to act. With Government assistance in quite a modest form the concern could be kept going this year, and might see a profit next year.

"So far as the transport side goes," Sir S. Brancker said, "it has been perfectly obvious that some form of direct assistance is necessary in order that aerial transport may pay its way. It would only be necessary for a matter of two years, after which we shall not want anything at all. Apart from the provision of aerodromes some direct assistance in the shape of a guaranteed minimum loan is required, and the Government would be welcome to use the services for mails or anything they care to. The trouble is that there does not seem to be any central Governmental control. The Treasury, the Disposal Board, the Post Office, and the Air Ministry are all sympathetic, but there is nobody in the middle to see that something is done. Aviation cannot be treated like that; it has to be treated as a whole.

"If we had been French pilots we should have made a very handsome profit. In fact, I think the French Government err on the side of liberality. With a profit we should be able to develop the industry in such a way as to make it a national asset."

Referring to the mass sale of aeroplanes and engines by the Disposal Board, Sir Sefton Brancker remarked that while it would be quite possible to use a proportion of such machines for commercial services, it was impossible indefinitely to continue living on scrap.

Germane to the same subject, and affording a possible ray of hope that the real position is at last dawning upon officialdom, was the discussion in the House of Commons on Tuesday, on the report of the Vote for the pay of the Air Force.

Lieut.-Col. Malone referred to the position of the Airco Co., the chairman of which, he said, had resigned as the company had been forced to dispose of the undertaking to the Birmingham Small Arms Co., in order that the workshops and machinery might be utilised for other purposes. This change would have a serious effect on the aircraft industry of this country. He was sure the Government recognised how much aviation in general was indebted to Mr. Holt Thomas. It was largely due to the initiative of that gentleman that aviation was started in this country. He hoped action would be taken by the Government to prevent the closing of one of the greatest of aircraft manufacturing firms.

Maj. Tryon, in reply, said the Air Ministry fully recognised the importance of the matter. A strong Advisory Committee was inquiring into the question of civil aviation. They sat that day, would sit again on Friday, and it was hoped that in a very few days they would be in a position to report. Their recommendations would be immediately considered by the Government; and it was intended to lay before the House, within a month, a full statement of the action which the Government intended to take. As the Advisory Committee was engaged on very important work, and was composed of distinguished men associated with aviation, he desired to say that when the Secretary of State for Air stated recently that civil aviation must fly by itself he referred to the ultimate way in which it should be sustained. His right hon. friend did not mean to debar any Government action that might be necessary, after the Committee had reported, to keep civil aviation going during the present difficult year following on the War, until it could be built up again.

Aerial Postman in the Channel.

WHILE flying from Paris to London on March 18, in foggy weather, Lieut. Harold Game, A.F.C., had trouble with his compass. He decided to come down off Beachy Head, and sighting the ss. "Selarus," circled round it to attract attention. His machine was equipped with flotation bags, and they kept it afloat till he was rescued by a small boat sent out by the "Selarus." Lieut. Game has crossed the Channel 130 times and this was his first mishap.

Saved from the Air

MILITARY pilots on De Havilland and Martin bombers recently put in good work at Fort Deposit, Maryland, breaking up the ice gorges of the Susquehanna River and preventing extensive floods. Bombs weighing 50 lbs., designed to penetrate the ice floes before exploding, were dropped from a height of 500 ft. The attack continued for several hours, shattering ice 20 ins. deep in the neighbourhood of Havre de Grace, over an area of one square mile.

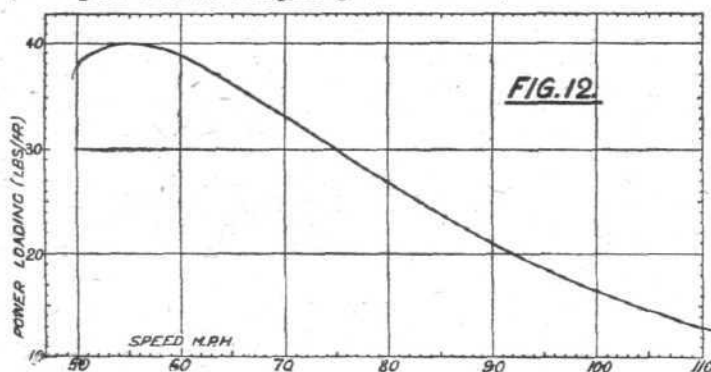
THE CASE FOR THE CANTILEVER WING

BY "MARCO POLO"

(Concluded from page 312.)

CONCERNING the rest of the machine, little need be said, since this is entirely a matter of personal opinion. For a small low price machine the writer is in favour of—let it be said in a whisper only—a three-cylinder radial two-stroke engine. This would be cheap to manufacture, and should be quite satisfactory. The two-stroke engine is chiefly in disfavour because of its alleged excessive fuel consumption. Now it appears to the writer that this only applies where a wide range of speeds is required, such as for road vehicles. The aeroplane is essentially a constant speed machine as regards 90 per cent. of its flying. That is to say, one would so design the engine that at the engine speed corresponding to the cruising speed of the machine the fuel consumption was at its most economical point. That the engine might be a little extravagant in its fuel consumption when all-out, or when throttled down to less than cruising speed, would, it appears to the writer, be of relatively small importance.

With regard to the power required for such a small machine this is largely a matter of opinion. For the weight of 600 lbs. (the figure used in comparing the efficiency of the cantilever



wing and R.A.F. 15), it is suggested that a maximum of 25-h.p. with a reduced engine speed for developing 17-h.p. (corresponding to cruising speed and most economical fuel consumption), would be all that was necessary. Mr. Bairstow, in his paper read before the Royal Aeronautical Society, gave a curve of speeds for various power loadings, from which it was seen that the average speed for a loading of 24 lbs./h.p. (which would be our power loading when the engine developed 25-h.p.) is 85 m.p.h. (I have replotted this curve in Fig. 12 to read loading per h.p. which is the more usual way of judging power loading).

In view of the fact that the cantilever wing has a somewhat higher resistance at high speeds than the ordinary wing sections on which Mr. Bairstow's curve is based, and since moreover, for this particular machine the propeller would probably be designed for maximum efficiency at cruising speed, the speed indicated by the curve might not be quite attainable. There is little doubt, however, that a maximum speed of between 75 m.p.h. and 80 m.p.h. would be possible.

At about 2/3 throttle the cruising speed would probably be somewhere in the neighbourhood of 65 m.p.h. If we assume a petrol consumption of .8 lbs./h.p./h. (which is surely not too optimistic, even for a two-stroke, since there are engines with as low a consumption as .5 lbs./h.p./h.) the machine would do a matter of about 38 miles to the gallon, at a speed of 65 m.p.h. With the present price of petrol,

this would mean a fuel cost of about 1½d. per mile, which should surely be low enough to appeal to a great number of pilots wishing to run their own little run-about. In view of the fact that the two-stroke engine is—or should be—cheaper to build than a four-stroke of similar type, such a machine as that outlined could probably be built to sell at a price of £200 or thereabout. At such a figure there would undoubtedly be quite a market, not only at home, but also, and probably more so, in the colonies where the distances are greater and where there are few railways. One can imagine a number of ranch owners and overseers to whom such a low-priced handy little machine would be of the very greatest service for covering large tracts of territory. If very carefully designed, the machine could be made as stable as desired, thus making it easy to fly, and with the cantilever wings, especially if made of metal, there should be next to no truing up to worry about.

An Alternative Design

Reference has already been made to another direction in which the cantilever wing would probably be found useful: For heavily staggered biplanes having the top plane set at a larger angle of incidence than that of the bottom plane in order to provide longitudinal stability without the use of a very large tail plane. Biplane combinations of this nature were examined by Hunsaker, who found that a forward stagger of the top plane, accompanied by a slightly greater angle of incidence, gave an appreciable righting couple, the magnitude of which could be controlled to a considerable extent by the amount of stagger and decalage.

In the general design for such a biplane, Fig. 13 (page 343), a stagger equal to the maximum chord has been used. The amount of stagger can be altered to almost any extent, and the one I have used is meant to form a compromise between the tandem combination, which is known to give inferior results, and the largest stagger of which the results have been measured recently (+ 30 deg.). It is anticipated that such a combination, with the top plane at an angle of about 2 deg. greater than that of the bottom plane, would give sufficient longitudinal stability, while not making the machine over-stable. Whatever aerodynamical effect is attained, the drawings indicate that the view of the pilot is excellent (for a biplane), and is not very inferior to that obtainable in a parasol monoplane. At the same time, the span (for the same total wing area) is reduced to 18 ft. so that even without folding the machine takes up little space. If it is desired to incorporate the wing-folding arrangement, this could be done as indicated in the illustration, by pivoting the top plane, and by fitting the two halves of the bottom plane in large spar sockets built into the fuselage and held in place by quick-release fittings. If brackets were provided on the sides of the fuselage, the matter of taking off the bottom planes and hanging them on the sides of the body would not be a very lengthy operation, although it would necessarily take longer than the swinging of the top plane or the monoplane of the parasol, Fig. 11.

As the area of the biplane has been kept approximately the same as that of the monoplane, and the body, tail and undercarriage are somewhat smaller, it may be expected that the performance of such a biplane, with a 25-h.p. engine, would be approximately as follows:—Maximum speed, 75 m.p.h.; cruising speed, 60-65 m.p.h.; and landing speed, 37 m.p.h.

No. 24 Squadron R.A.F.

It is proposed to hold an officers' re-union dinner in London on Saturday, April 24. Full particulars of the arrangements, as well as details as to copies of the Squadron history, can be obtained from Capt. V. A. H. Robeson, c/o The Manager, The London City and Midland Bank, Ltd., Tewkesbury.

Airship to Float and Submerge

At the inaugural banquet of the Society of Consulting Marine Engineers and Ship Surveyors on Tuesday, Sir Fortescue Flannery, M.P., the first president, said the aerial engineer had had to borrow from the lessons taught him by the marine engineer. The internal combustion engine, the screw propeller, and the oscillating rudder were all given by the marine engineer. The airship which could fly, which could, in fact, float, and which could submerge was, in his judgment, no impossible dream of the future. Some of them might live to see it.

A Handley Page in China

THE twin-engine Handley Page aeroplane supplied to China recently made its official test flight with representatives of the Chinese Government on board. The machine left Nanyuan aerodrome at 2.15 p.m. with 14 passengers and 1,200 lbs. of sand which acted as test load. The machine so loaded had a total weight of 6 tons. After climbing to 6,200 ft., three circuits of Peking and the surrounding country were made, the machine diving three times in salute over the President's Palace. The engines and the machine behaved splendidly throughout the flight in spite of the intense cold which prevailed at 6,000 ft. Mr. K. Y. Wei and Gen. Tsing, who represented the Chinese Government on the test, occupied the front seats of the machine, and after landing were enthusiastic over its steadiness and the feeling of security it inspired.

A landing was made in failing light in an aerodrome festooned with Chinese lanterns.

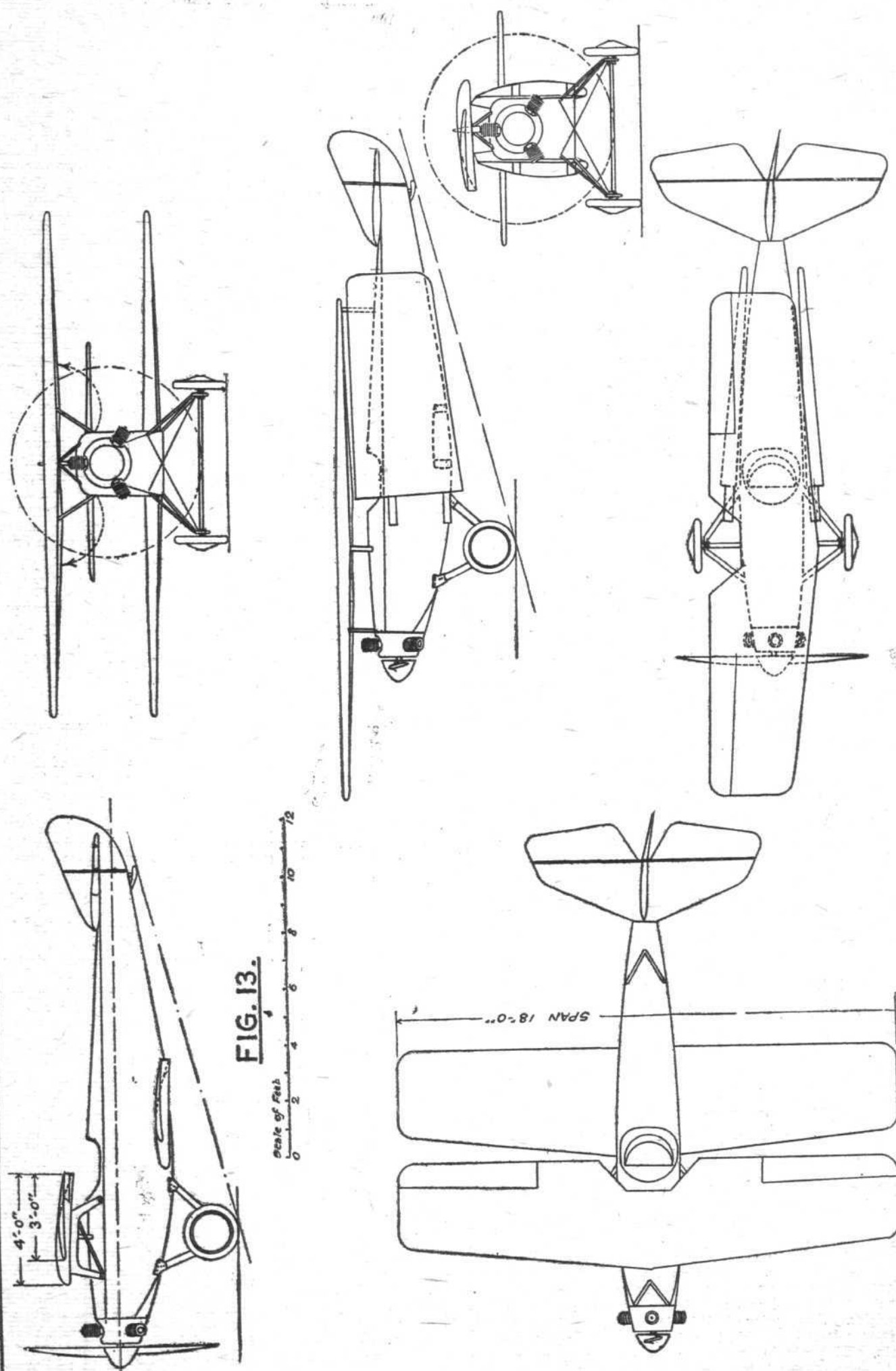


Fig. 13: The case for the cantilever wing

POSTAGE STAMPS OF THE AIR

By DOUGLAS B. ARMSTRONG, Editor, "Stamp Collectors' Annual."

ON the wings of the wind has come the flying post with its burden of previous missives, sped by the aerial postage stamp. For the air post demands a special fee as the reward of its swiftness, denoted by its own particular stamp. With the rapid development of the aerial postal service throughout the world has sprung into being its attribute the air postage stamp, necessitated by the supplementary charges levied upon letters borne by this modern Mercury.

Already these novel and convenient souvenirs of the conquest of the air provide a notable and ever-increasing group of stamp issues, numbering, amongst them at least two items of no inconsiderable value, and, as such, have found favour with a large number of stamp-collecting enthusiasts. Indeed, it is the opinion of one of the foremost philatelic experts that aerial postage stamps will be the fashionable vogue with philatelists for some time to come. Almost every week brings with it some new variety of air post stamp from the four winds, which, with their romantic record of aerial progress, form a fascinating and absorbing collection.

Pioneer Postmarks.

Philatelic souvenirs of the early experimental air mails are for the most part confined to special postmarks or commemorative postal cards, and it is only of comparatively recent years that adhesive stamps of a distinctive character have been employed. Certain of these air mail covers, however, are highly prized by collectors of aerial stamps, especially in America, where an Aero-Mail Club for the exchange and study of such subjects of philatelic interest has been in existence for several years. Not long ago quite a small collection of air mail covers and postmarks sold for more than £100.

Of particular interest is the cancellation applied to letters carried by the "First Aerial Post" at the United Provinces Exhibition, Allahabad, on February 8, 1911, containing a silhouette of a tiny aeroplane flying over a range of mountains. The pictorial souvenir cards issued in connection with the "First U.K. Aerial Post" from London to Windsor in September, 1911, are too well known to need description, but copies find a ready sale at a few shillings each nowadays.

Private stamps of special design were used to denote the supplementary fee upon letters conveyed by experimental air post at several of the French aviation weeks, and also by the Zeppelin and other private air post services in Germany, as early as 1912, but in every instance the ordinary inland postage had to be defrayed in addition by the national stamps of France or Germany, so that these private labels cannot be accounted postage stamps in the strict sense of the term. One of the earliest examples of private air post stamps of the face value 25 centimes, was designed by Emile Friant, and used at Nantes in July, 1912. Another variety, designed by Senor Lubardy, was affixed by permission of the Director-General of Posts and Telegraphs to an air mail carried on a trial flight in the Argentine in August of the same year.

It was left, however, to the Great War to introduce that element of necessity which gave impetus to the official adoption of the aeroplane as a mail carrier, and the resulting creation of aerial postage stamps.

First Air Post Stamps.

To Italy belongs the distinction of having originated the first adhesive aerial stamp in connection with a special aeroplane postal service inaugurated between Rome and Turin on May 22nd, 1917, with a view to relieving congestion on the State Railways, caused by military traffic. A few weeks later a seaplane post was established between Naples and Palermo to avoid the submarine menace. The stamps which franked letters by these special posts consisted of the contemporary 25 centesimi Express Letter stamp bearing an overprint denoting its particular purpose.

A Rare Air Post Error.

An air line stamp of the denomination 24 cents was introduced by the United States Post Office on May 15, 1918, for franking letters over the government air mail route from New York to Washington via Philadelphia. The design represented a military biplane in flight, and through inadvertence, a single sheet of 100 copies was printed with the central vignette upside-down. This was acquired by a wealthy American philatelist for no less a sum than £4,000, and to-day the error is numbered amongst the greatest of modern philatelic rarities. So popular did this air mail prove that by July, 1918, it was found possible to reduce the fee upon letters to 16 cents, and again in December to 6 cents, new editions of the biplane stamp being prepared in accordance with the

reduced rates. Recently the ordinary 2 cents postage rate has been extended to letters conveyed by air, but no special stamp of that value has so far been issued.

Trans-Atlantic Varieties.

Popular interest, however, centres chiefly round the special postage stamp issues associated with the first Trans-Atlantic aerial flights in May of the present year. For use on the mail carried by Hawker and Grieve on their ill-fated attempt to cross the Atlantic, 200 copies of the current 3 cents postage stamp of Newfoundland were specially overprinted "First Trans-Atlantic Air Post, April, 1919" in five lines of black type. Ninety-five of these stamps were actually used to pre-pay letters in the salvaged mail, 18 were damaged or destroyed, 11 were reserved for presentation copies, and the unused balance of 76 sold for £5 apiece in aid of the Marine Disasters Fund. Genuinely used "Hawker covers" are scarce, and command about £50 each, but unused specimens are worth only a tenth of that amount.

A souvenir album containing an unused Hawker stamp, initialled on the back by the Postmaster-General of Newfoundland, and bearing the autographs of Hawker and Grieve, Alcock and Brown, Lord Northcliffe and Mr. Sopwith, was sold for charity in London not long ago for 200 guineas, the purchaser being Lieut.-Col. E. G. Halford of the Air Ministry.

The thirty letters comprising the air mail borne across the Atlantic by Messrs. Alcock and Brown on their successful non-stop flight were overprinted "Trans-Atlantic Air Post, 1919—One Dollar" on the Newfoundland 15 cents stamp of 1897. Used Alcock-Brown stamps must, of course, be considerably rarer than their "Hawker" prototypes, but unused they were sold in large numbers by the Newfoundland post office at \$1.15 each, and were available for use on any cross-Atlantic Air Mail during the current year.

An abortive set of stamps were likewise overprinted for use on the Raynham-Martinsyde flight, which, as will be recalled, came to an early and disastrous conclusion. The stamps were of the values 1, 2, 3, and 24 cents, bearing the imprint "1st Atlantic Air Post—Martinsyde-Raynham-Morgan." They exist with the St. John's postmark of May 17, 1919, but must be considered under the classification of "stamps prepared for use but not issued."

From Other Lands.

The inauguration of an air post between Zurich and Basle on April 28, 1919, was marked by the issue of a special 50 cents aerial postage stamp overprinted with the device of the Swiss Flying Corps—a winged propeller in red, whilst in Tunis on May 5, 1918, was created a similar stamp of 30 cents, overprinted in red on the ordinary 35 cents postage stamps, with a pair of wings outspread and the inscription "Poste Aerienne".... For use on an aerial mail transported from Barranquilla to Porto Colombia in South America recently, 200 examples of the current 2 centavos stamp of the Colombian Republic received the imprint "1 SERVICIO POSTAL AEREO 6-18-19" in black.

Japanese 1½ and 3 sen postage stamps, overprinted with the device of a small monoplane in red or black, were utilised in connection with an experimental air post between Tokyo and Osaka in October last.

Canada's first air post stamp, which appeared under the auspices of the "Aero Club of Canada's First Aerial Mail Service—per Royal Air Force" in August, 1918, shows a picture of an aeroplane destroying a Zeppelin, and was sold for 25 cents in aid of the Royal Air Force Comforts Fund.

Air Post Stamps in Prospect.

At the present time the French Government stamp printery on the Boulevard Brune, Paris, is busily engaged in the production of a set of three special stamps of the denominations 75 cents, 1 fr. and 1 fr. 25 cents, printed in black, blue and red respectively, for denoting the surtax on letters carried by aerial post. The design by M. Leon Ruffe, the well-known artist, has in the centre a portrait of the intrepid aviator Guynemer, flanked on the left by a view of the aerodrome at Issey les Molineaux, and on the right by a vignette of an aeroplane flying over the Seine.

Other prospective air post stamps hail from Belgium and the Belgian Congo, and Italy.

No more than passing mention is possible here of the "Flug Post" stamps issued in Austria and Hungary during the war. The Austrian type was first utilised in March, 1918, in connection with a daily air post service between Vienna and Kiev, which covered the distance in from 10 to 12 hours, as against 40 taken by the mail trains.

The British air post service promises to be the only one that cannot boast a distinctive postage stamp. In Germany special air post stamps have lately been provided in the values 10 pfg. and 40 pfg., both inscribed "Deutsche Flugpost." The design of the former represents a post-horn, and that of the latter a biplane in flight.

The air post is as yet in its infancy, but, with the extension of the system throughout the world, it is certain that aerial postage stamps will loom large in the stamp collections of the future. Then it is that the value and interest of the first pioneer issues here described will be of an ever-increasing quantity.

ROYAL AERONAUTICAL SOCIETY NOTICES



Lectures.—Mr. J. L. Cope's lecture on "Aerial Survey in the Antarctic" will take place on Wednesday evening, April 7, at 8 p.m., at the Royal Society of Arts, 18, John Street, Adelphi.

Owing to Easter there will be no lecture on March 31.

Sir Sefton Brancker has found it necessary to postpone the date of his lecture on "Aerial Transport from the Business Point of View,"

from April 14, and, through the kindness of Capt. P. D. Acland, this will now take place on April 28, when Maj. G. C. Tryon, Under-Secretary of State for Air, will preside.

Capt. Acland's paper on "Trans-Continental Flying" will now be read on Wednesday evening, April 14. Owing to the change of date, Maj.-Gen. Sir Frederick Sykes, Controller-General of Civil Aviation, has written regretting that he will now be unable to take the chair as arranged.

Annual General Meeting.—At the annual general meeting, to be held at the Society's offices at 5 p.m., on Tuesday, March 30, the Council will bring forward motions proposing to increase the subscription rates for all grades of members (excepting students).

Examinations.—A Committee, consisting of Wing-Comdr. Cave-Browne-Cave (Chairman), Maj. Low, Messrs. Piercy, Pritchard and Pippard, and Dr. Walmsley, has been ap-

pointed to draft the rules and regulations for the proposed examinations for Associate Fellowship.

Students.—The Society has been informed by No. 1 Aircraft Cadet Training Wing, that it is proposed to have a limited number of Technical Cadet Sergeants in charge of evening instructional classes on aero engines, wireless, aeroplane rigging, etc., which posts it is proposed to offer in the first instance to students of the Royal Aeronautical Society. Any student wishing to apply for one of these posts should write, mentioning that he is a Student-Member of the Society, to the Officer Commanding, No. 1 Aircraft Cadet Training Wing, 25, Camden Road, N.W.

Donations.—The Council wish gratefully to acknowledge the receipt of sets of lantern slides from Major C. F. Abell, Associate Fellow, Messrs. the British Aerial Transport Co. and Messrs. Walton Motors, Ltd.

Library.—In view of the end of the winter months, the practice of opening the Library for the use of members on Saturday afternoons has been suspended until next autumn. The Library will, therefore, on and after Saturday, March 27, only be available between the hours of 10 and 12.30. On other week-days it will be open from 10 a.m. to 5 p.m. as heretofore.

W. LOCKWOOD MARSH,
Secretary.

7, Albemarle Street, W.1.

Personals

Previously reported Missing, now reported Killed
Lieut. L. H. Thierry, R.F.C.

Previously reported Missing, now reported Died of Wounds while a Prisoner in German Hands
Lieut. G. A. Cranswick, York. and Lanc. R., att'd. R.F.C.

Death

Flying Officer HORACE LLOYD HOLLAND, who was drowned at sea, in performance of duty, on February 21, at the age of 21, was the younger son of Otho and Mary Holland, of 31, Chatsworth Road, Bournemouth, and grandson of the late Horace Lloyd, Q.C.

Married

A. CONRAD COLLIER, R.A.F., younger son of Mr. and Mrs. Alfred H. Collier, late of Sevenoaks, Adelaide, and Sydney, was married on March 20 at St. Mark's Church, Hamilton Terrace, W., to GLADYS MARY CARMICHAEL, only daughter of the late Mr. and Mrs. JOHN H. LUIS, of Broughty Ferry.

Capt. ALBERT JAMES ENSTONE, D.S.C., D.F.C., R.A.F., second son of the late Th. Enstone and Mrs. Enstone, of Edgbaston, Birmingham, was married on March 16 at St. Mary's, Bryanston Square, to ELSIE GRACE, only daughter of the late ARTHUR LILIENFELD and Mrs. Lilienfeld, of 28, Bryanston Square, London, W. 1.

Capt. GERALD C. MAXWELL, M.C., D.F.C., A.F.C., younger son of the Hon. Bernard C. and Mrs. Maxwell, of Farlie, was married in New York on March 8, to CARRIE, younger daughter of GEORGE CARDEN, of New York.

Flying Officer JOHN SEWELL, R.A.F., was married on March 16 at Blacklands Church, Hastings, to MARJORIE,

only daughter of FRED. JUDGE, F.R.P.S., and Mrs. Judge, Hastings.

To be Married

The engagement is announced between R. D. LAMBERT, R.A.F., third son of Mr. and Mrs. John Lambert, of Ardrossan, Ayrshire, and MABEL, only daughter of Mr. and Mrs. WILLIAM BOURN RUTTER, of Holmbury, Mortimer Road, Ealing.

The engagement is announced between Miss MARGUERITE HELEN SCOTT, of Bournemouth, and Lieut. A. W. GREEN, R.A.F., late of Bournemouth, now Fort Saskatchewan, Canada.

The engagement is announced between Capt. FREDERICK WILLIAM WALKER, D.S.C., A.F.C., Royal Air Force, only son of Mr. and Mrs. F. G. Walker, of Muswell Hill, London, and DOROTHEA MAUD, younger daughter of Mr. and Mrs. MORRISON-MCCULLY, of Alverstoke, Hampshire.

Items

Mr. E. R. CALTHROP, the inventor of the Guardian Angel parachute, has been honoured by the King of Italy, who, in recognition of Mr. Calthrop's services to aviation, has conferred upon him the Cross of Chevalier of the Order of St. Maurice and St. Lazarus. We understand that the award was made for the successful use made in the Italian campaign of the Guardian Angel parachute for dropping spies in hostile territory.

Capt. Sir JOHN WILLIAM ALCOCK, of Kingswood Road, Fallowfield, Manchester, the winner of the £10,000 *Daily Mail* Prize for the Atlantic flight, who was killed in an accident near Rouen, on December 18, aged 27, left estate of the gross value of £9,275, with net personalty £8,680.

Air Ministry Industrial Council

THE first meeting of the Industrial Council for the Air Ministry, which has been set up under the scheme for the application of the Whitley Report to Government industrial establishments, was held on Monday. This Council will consider all questions relating to the working conditions of the industrial employees of the Department, other than wages, and is empowered to make provision for local machinery in the form of works or other committees.

Seeing the Boat Race from Above

THERE are very few people who have seen the Oxford and Cambridge boat-race from start to finish, but we understand that it is now within the reach of any one who considers it worth £5.

The Lep Aerial Travel Bureau have announced that they have detailed special machines for this purpose next Saturday. By circling over the river the passengers will have a full view of both crews from Putney to Mortlake.

THE FLIGHT TO THE CAPE

At last the flight from England to the Cape has been accomplished, although not by one machine, and the honour has been won by Lieut.-Col. van Ryneveld and Maj. Brand, who completed their task on the De H. machine "Voortrekker" (Pioneer), the machine placed at their disposal by the South African Government after the crash of the Silver Queen II at Bulawayo. This machine, which had previously flown from Pretoria to Bulawayo in 5 hours 9 mins., made the journey from Bulawayo to Pretoria on March 17, and on the 20th it arrived safely at Cape Town, a stop being made at Beaufort West. The machine landed in Young's Field, Wynberg. After circling over the city, the pilots were given a most enthusiastic reception by a large crowd, and they were cordially greeted by Lord Buxton, Governor-General of South Africa, and Gen. Smuts. The Union Government has made a grant of £5,000 to the two officers, and Col. van Ryneveld is reported to have been appointed head of the Union Air Force.

The King has sent the following telegram to Col. van Ryneveld on the completion of the flight from Cairo to Cape Town :—

"I send to you and Maj. Brand my hearty congratulations on your very successful flight.—GEORGE R.I."

Telegrams of congratulation have also been sent to Col. van Ryneveld by Mr. Churchill (Secretary of State for War and Air), by the Air Council, by Sir F. H. Sykes (Controller-General of Civil Aviation), and by the Under-Secretary of State for Air.

The following is a brief diary of the flight of Col. van Ryneveld and Capt. Brand :—

February 4.—Silver Queen flies from Brooklands to Turin.

February 5.—Rome reached.

February 8.—Sollum (Western Egypt) reached after crossing the Mediterranean in a storm, the journey from Taranto taking 14 hours.

February 9.—Cairo reached.

February 10.—Cairo left at 11.36 p.m. on a non-stop flight to Khartum.

February 11.—Silver Queen I crashes at Wadi Halfa. Machine wrecked, but engines salvaged undamaged.

February 16.—Col. van Ryneveld and Capt. Brand return to Cairo.

February 22.—New start from Cairo on Silver Queen II, fitted with engines of Silver Queen I. Descent at Wadi Halfa owing to head wind.

February 23.—Khartum reached. Machine detained by engine trouble.

February 25.—Flight from Khartum to Mongalla.

February 26.—Silver Queen II reaches Kisumu (Victoria Nyanza).

February 27.—Flight from Kisumu to Shirati (89 miles only. On this day *The Times* aeroplane crashed at Tabora, 305 miles further south).

February 28.—Non-stop flight from Shirati to Abercorn, Northern Rhodesia.

February 29.—From Abercorn to N'Dola.

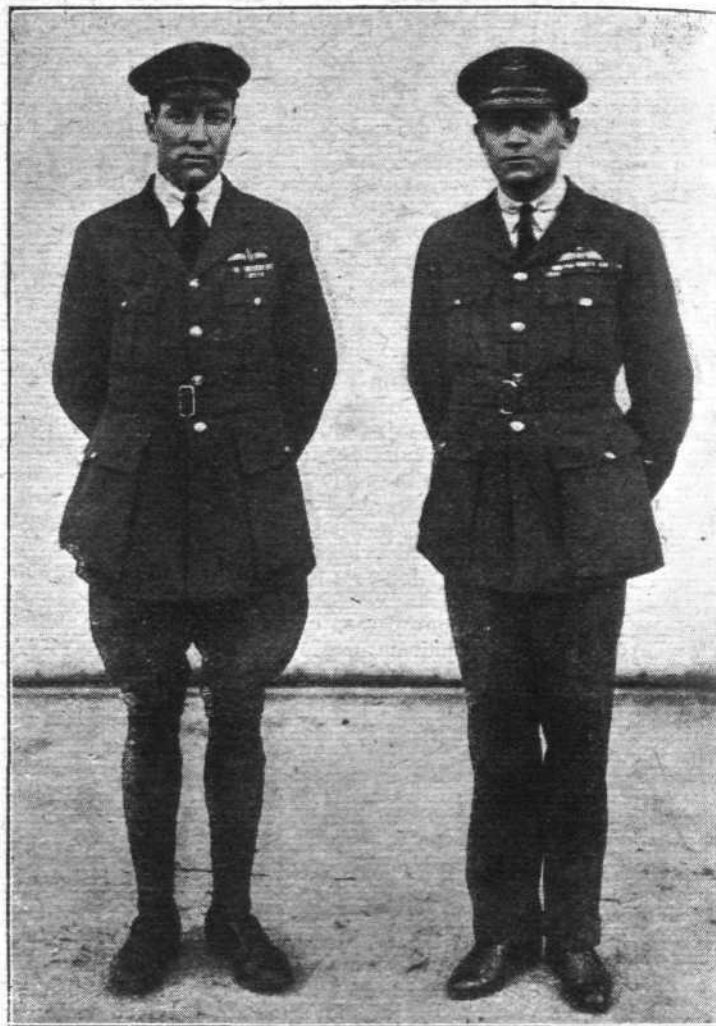
March 2.—Livingstone (just above the Victoria Falls) reached. Machine detained by heavy rain.

March 5.—Flight from Livingstone to Bulawayo.

March 6.—Silver Queen II crashes a mile from Bulawayo when starting for Pretoria. Col. van Ryneveld and Capt.

Brand remain at Bulawayo pending arrival of a new machine sent from the Cape.

March 17.—Col. van Ryneveld and Capt. Brand leave Bulawayo on the Voortrekker, and fly to Pretoria.



CAIRO-CAPE FLIGHT : The pilots who have succeeded in covering the entire distance between Cairo and the Cape by way of the air. Right—Lieut.-Col. P. van Ryneveld, D.S.O., M.C. Left—Capt. C. J. Q. Brand, D.S.O., M.C., D.F.C.

March 20.—Voortrekker leaves Bloemfontein, and reaches Cape Town, 5,206 miles from Cairo by the air route.

Capt. Cockerell and Broome, the pilots of *The Times* machine are now on the way back to England. The framework and cabin of the wrecked Vickers-Vimy machine have been taken over by the Tabora Sporting Club for use as a pavilion, but the engines are being sent back to England.

PROHIBITED AREAS IN INDIA

As mentioned recently, the regulations for civil aviation in India follow closely on the lines of those which have been adopted in the United Kingdom. They have just been published in the *Gazette of India*, and the chief point of interest is in respect to the prohibited areas, which are as follows :—

The River Indus is to be the northern boundary of civil flying, save for certain portions of the Peshawar and Derajat districts; the triangular area enclosed between the Karachi-Kotri railway and the right bank of the Indus below Kotri; and two "corridors." One of these is 20 miles wide from Sukkur (exclusive) to Quetta, following the general line of the North-Western Railway; the other, a corridor 20 miles wide along the Mekran coast.

All territory lying within three miles of the Arsenal at Quetta and within five miles of the lighthouse at Manora (near Karachi) is to be avoided; also all territory lying within

three miles of the south point of the Colaba promontory Bombay; of Fort Chingri Khal, near Diamond Harbour, Calcutta; and of the arsenals at Rawalpindi, Ferozepur, and Kirkee.

Other prohibitions relate to :—

The Kidderpore Docks, the jetties, the site of the new King George's Docks, Calcutta; also the River Hooghly, between the Botanical Gardens and Howrah Bridge, Calcutta.

Viceregal Lodge, Delhi (one mile limit).

Budge Budge petroleum depôt.

Powder magazine at Moyapore.

The Syriam Pagoda, Rangoon (seven miles limit), and the oil refineries at Syriam, on the Pegu river, and at Seikkyi and Thilawa, on the Rangoon river.

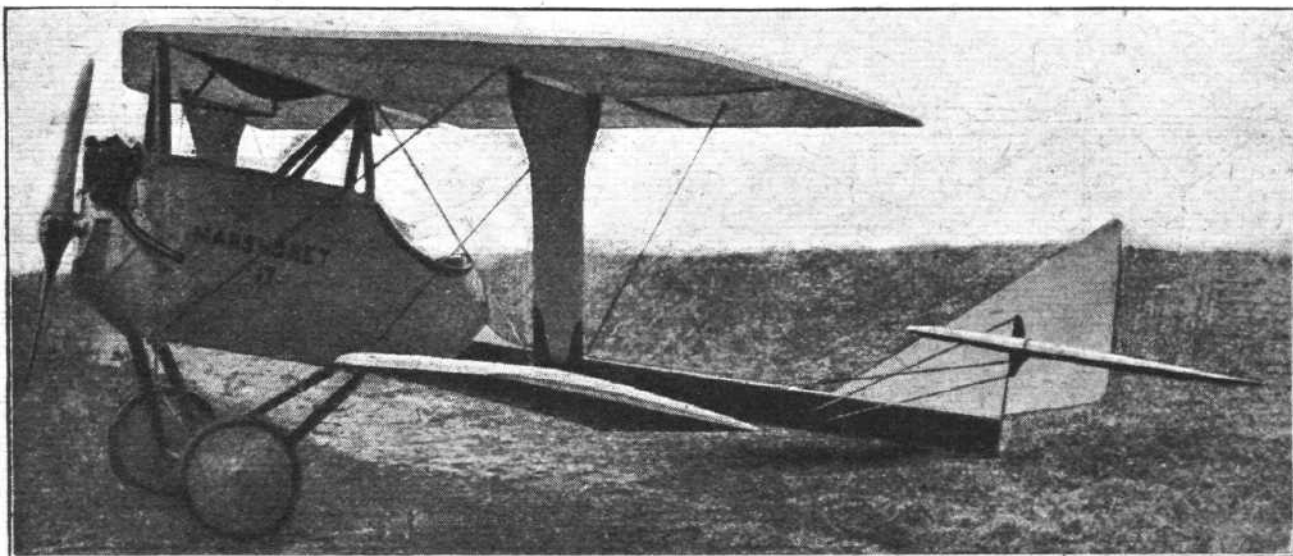
The Singu and Yenangyaung oilfields, in the Magwe, district, Burma.

THE HILD-MARSHONET SPORTPLANE

THE Hild-Marshonet sportplane, which hails from the United States of America, was designed to meet the demand for a moderate-price aeroplane, built of the best materials and workmanship. This little machine, the outcome of 10 years' experience in aeroplane engineering, possesses several noteworthy features, especially in connection with machines of its class. The particular machine shown in the accompanying photographs and scale drawings is fitted with a 20 h.p. two-cylindrical air-cooled engine, but a second model, similar in every other detail, is being equipped with a four-cylindrical water-cooled engine developing 40 h.p. at 1,100 r.p.m., and

The main spars are of I-section spruce, laid out in "A" formation—converging at the outer extremities. The ribs are of boxwood with spruce cap strips, secured with brass screws. The fabric covering is sewn on the wing framework, and treated with five coats of Dupont dope and a final coat of varnish.

A single interplane strut, more or less of streamline section, is fitted on each side of the body, and above the latter an inverted V pylon forward and a pyramid of four struts aft, serve as attachments for the upper planes. The interplane struts are built up of two

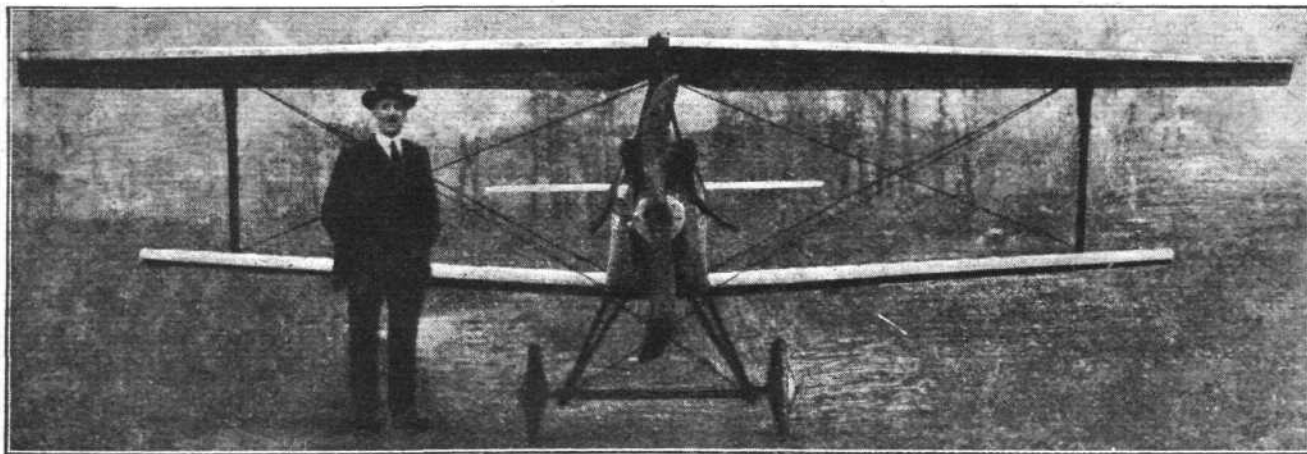


Three-quarter front view of the Hild-Marshonet sportplane

weighing 135 lbs. This engine, which was used with success in 1914, was designed by Mr. James C. Spainhour, M.E., who is associated with the designers of the Hild-Marshonet aeroplanes, and will be put into production for use exclusively in both the single and two-seater Hild-Marshonet machines.

It will be seen that the upper main planes, which have no dihedral, have their leading edges swept back, whilst the lower planes are given a "sweep forward" and set at a dihedral angle of 6°. The top plane is staggered forward, the angle of stagger at the body being 40°, and, by virtue of the "fore-sweep" of the lower plane, at the tips, 12°. This unusual lay-out of the wings not only makes for stability

layers of three-ply veneer, reinforced at the centre with a bevelled spruce strip, and at the edges with aluminium, all securely riveted together. The steel strut attachments are also riveted to the strut. There are two flying cables and one anti-lift cable each side, all of $\frac{3}{16}$ in. diameter, and no turn-buckles are used. On the rear pylon, within easy reach of the pilot, is a quick-release lever to which are secured the anti-lift cables, and by means of which the pilot may relieve the tension of the cables, thus enabling the main planes to be removed single-handed, with the greatest possible ease. This, of course, is a great advantage in a machine of this type, enabling it to be stored in a very small space



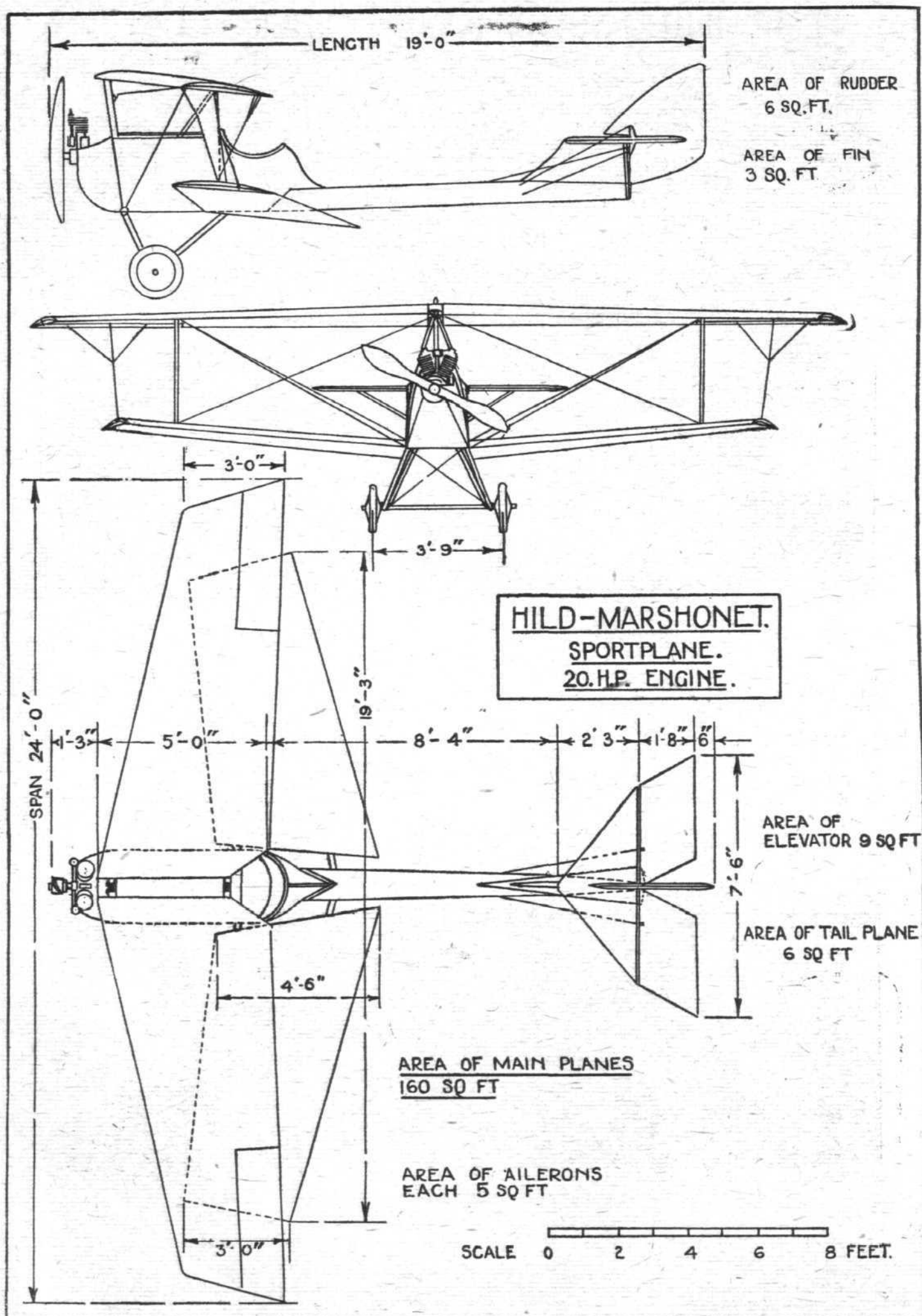
Front view of the Hild-Marshonet sportplane

both lateral and longitudinal, but allows an excellent range of vision.

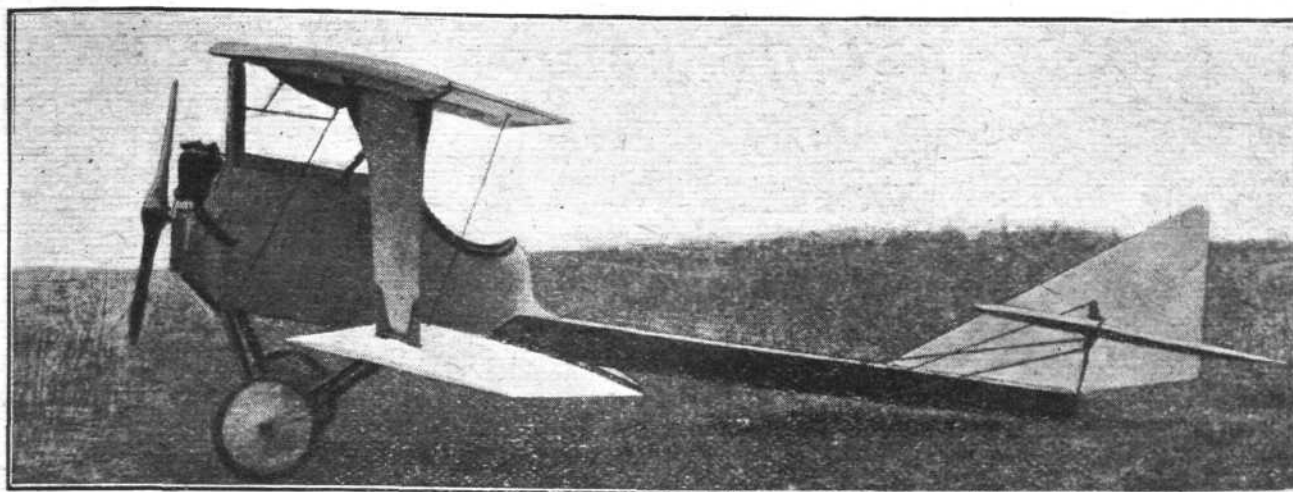
The chord of the top plane tapers from 5 ft. at the root to 3 ft. at the tip, the curvature and depth of the ribs varying to suit the chord. The lower planes also taper in chord from 4 ft. 6 ins. to 3 ft. N.P.L. wing section No. 4 is employed, this section having a high lift and a good L/D for the 4° angle at which the planes are set.

(not more than 9 ft. by 20 ft.), and necessitating the minimum of labour and attention in erecting and dismantling. The interplane struts, it should be mentioned, fold against the surface of the upper planes and are secured in place by a catch. The ailerons are hinged to the rear spars of the upper planes.

The tail planes consist of a triangular horizontal stabilising surface, to the trailing edge of which are hinged two elevator



THE HILD-MARSHONET SPORTPLANE : Plan, side and front elevations to scale



Side view of the Hild-Marshonet sportplane

flaps, a vertical fin and a balanced rudder. The horizontal stabiliser, which is set at 0° a few inches above the line of thrust, is built up of spruce, and is mounted above the fuselage on the vertical fin. Both the rudder and elevators are constructed of steel tubes and wood ribs. The control cables are in duplicate and pass through the fuselage, the rudder cables entering the latter at the top, through copper tube guides, and the elevator cables at the sides.

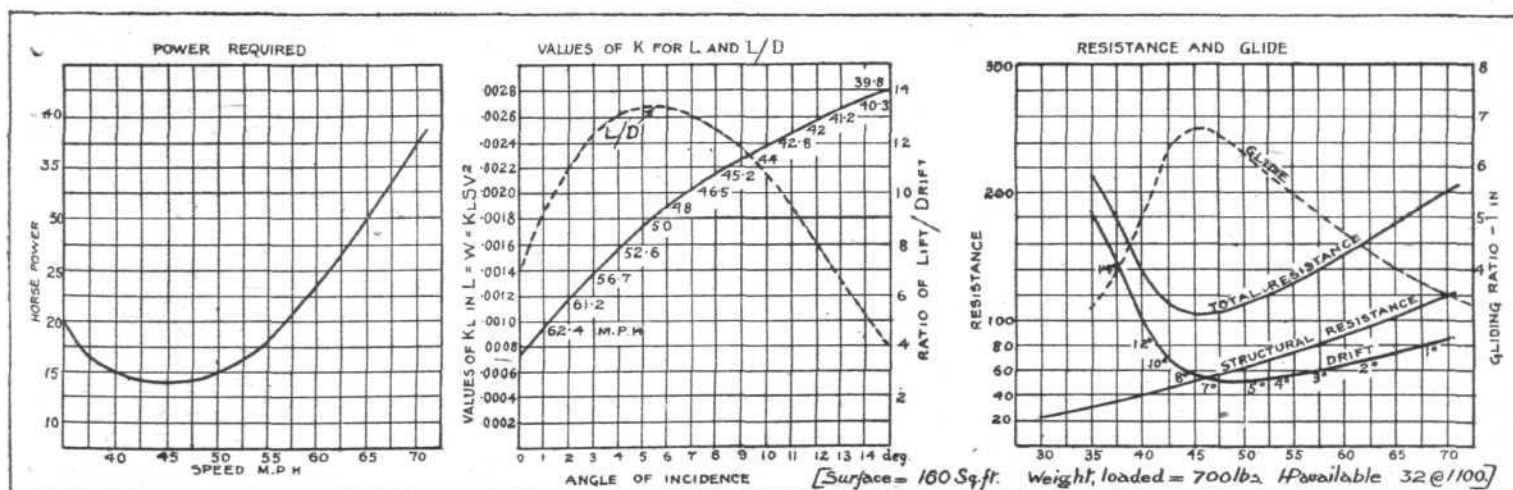
The fuselage is exceptionally strong, being built up of three-ply veneer, reinforced with aluminium and steel bulkheads riveted to the veneer. The cowling is of aluminium, reinforced with steel braces, which are also secured with bolts to the fuselage. The cockpit is comfortably upholstered, and getting in and out is easily accomplished, the pilot using the top of the fuselage immediately behind the cockpit as a step—this being a height of only 18 ins. from the ground.

The landing chassis is of the V-type, of steel tube construction streamlined with wood fairings wrapped with linen. Each V is connected by a cross tube in front of the axle, and the front bay is wire braced. The axle is $1\frac{1}{4}$ ins. diameter, and the wheels are 20 ins. by 3 ins. (larger wheels, 26 ins. by 3 ins. will be fitted in future models). The tail skid is a combination of steel and rubber, and acts as a brake on alighting.

The accompanying curves show the calculated performance of the 40 h.p. model. It is proposed to put both single-seater and two-seater machines in production at an early

date, and it is hoped to fix the prices somewhere in the neighbourhood of \$2,000 and \$2,400 respectively. The principal characteristics are as follows:—

Span—			
Top plane ..	..	..	24 ft.
Lower plane ..	..	..	19 ft. 3 ins.
Chord—			
Top plane ..	..	..	5 ft. to 3 ft.
Lower plane ..	..	..	4 ft. 6 ins. to 3 ft.
Gap ..	..	..	3 ft. to 4 ft.
Overall length ..	..	..	19 ft.
Angle of incidence ..	..	..	4°
Wing section ..	..	..	N.P.L. No. 4.
Total area of main planes ..	..	..	160 sq. ft.
Area of—			
Ailerons (two) ..	..	..	20 sq. ft.
Stabiliser ..	..	..	6 sq. ft.
Elevators ..	..	..	9 sq. ft.
Fin ..	..	..	3 sq. ft.
Rudder ..	..	..	6 sq. ft.
Factor of safety throughout	..	..	7
Weight of machine, empty ..	..	..	450 lbs.
Weight fully loaded, all on for	..	..
three hours ..	..	..	700 lbs.
Speed range (40 h.p. engine)	..	..	35-65 m.p.h.
Climb ..	..	..	780 ft. per min.
Glide ..	..	..	1 in 8.



Calculated performance chart of the Hild-Marshonet sportplane

Another Incendiary Bullet Claim

ANOTHER claim in respect of incendiary bullets was heard by the Inventions Commission on March 15.

Maj. Peer Groves, it was stated, gave certain information to Comdr. Brock, on which he believed the latter acted.

He discovered it was quite possible to put an incendiary bullet through a hydrogen gasbag without anything occurring.

The conclusion he came to was that the bullet must have a "filling," which would make what might be termed a quasi explosion and create a fierce flame. There was also a primer to set this off, in the form of a pellet of a certain composition, the idea being that when the pellet struck any Zeppelin fabric friction would be produced sufficient to set the bullet off.

Mr. Moritz, for the Admiralty, asked that the room should be cleared when the composition of the bullet had to be discussed, and Maj. Peer Groves gave evidence in camera.

The hearing was concluded in camera, and the decision will be announced in due course.

An Aircraft Engine for Liverpool University

THE engineering museum of Liverpool University has just received an interesting exhibit in the shape of a complete 90 h.p. Le Rhone engine which has been presented by Messrs. W. H. Allen, Son and Co., Ltd., of Bedford. The engine is electro-plated and polished, and one of the cylinders has been cut so as to show the internal mechanism.

AIRISMS

FROM THE FOUR WINDS

This week undoubtedly the item of news is the resignation of Mr. Holt Thomas from the chairmanship of the Aircraft Manufacturing Co., Ltd., and his reasons for that very important step. Mr. Holt Thomas sets out his convictions in a statement from him which appears elsewhere in this issue, and as this action upon his part must, in the ordinary course of events, be but the forerunner of drastic consequences, it is to be hoped that our vote-snatchers on high may begin to realise the seriousness of the aviation situation from the Imperial point of view, and put up some sort of show of retrieving the grievous mistakes which have hitherto attended their decisions in regard to their attitude towards the present and future of aviation. To lose all that our noble Flying Corps attained by their sacrifices in the War,

of the spirit pertaining with our commercial magnates, according to our Italian contemporary, the *Epoca*, an important British aviation firm has made an advantageous offer to the Italian Government to undertake the entire aerial service throughout Italy. British aeroplanes, constructed in Italy, would be used for the purpose.

PARIS to Tokyo—6,562 miles—in six days sounds a big jump over 15 days by railway and 40 days by sea. Yet the latter is the time occupied at present for the journey, according to M. Louis Breguet, the great French aeronautical engineer and President of the Union of Aeronautical Industries, and the former is the time in which he estimates the distance will presently be covered by aeroplane. This



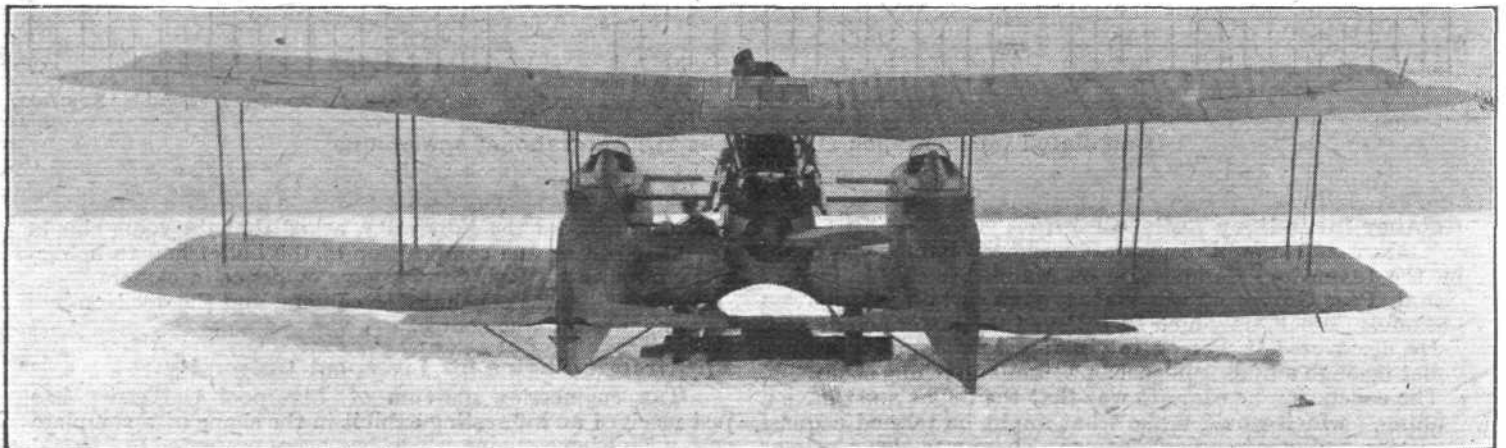
The latest production of the Thomas-Morse Corp., of Ithaca, N.Y., which recently went through its trials. It is a twin-fuselage biplane, 45 ft. span and 35 ft. long, with a central nacelle carrying two 300 h.p. Hispano-Suiza engines driving tractor and pusher screws respectively

through the vapid indifference and want of appreciation of our opportunist political "masters," is indeed a ghastly crime against the Empire which it is well to note when the wound is still gaping. Like curses, sooner or later, this betrayal of our dead flying men's legacy will come home to roost upon the reputations of the politicians who are more concerned with their personal and immediate jobs and aggrandisement than with the real welfare of the Nation's future.

FORTUNATELY enterprise on the part of our enthusiastic constructors may still save the situation for the country, as individual effort as against bureaucratic control always has done in the past in other vital matters. As evidence

comforting prophecy was made by M. Breguet the other day in Paris to the Japanese Military Aviation Mission, which is at present studying the position in Europe of affairs of the air. Will the time come when the yellow race will fly over to these lands in swarms of battalions in six days? We wonder. It is not quite yet, but the future *has* to be thought of, and why not think really far enough?

It sounds very practical that the great shoals of fish as they breast their way through the seas should be easily "spotted" by means of the seaplane and dirigibles, and an easy harvest thereby assured to the fleets of the fishermen who bring in the harvest of the sea for man's consumption. Again, the French lead in this matter, experiments being



The Thomas-Morse twin-fuselage biplane as seen from the rear

this week carried out by the naval seaplane stations in the Toulon region. As soon as the machines return to their bases the pilots will present reports, which will at once be communicated to fishermen, in order that the information obtained may at once be utilised. These experiments will be carried out at Saint-Tropez, Saint-Raphael, Saint-Mandrier, etc.

In but a very short time, by good organisation in association with wireless, it should reduce the present uncertain roaming voyages of the fishing-fleets in search of catches, to a scientific certainty, and the general public may then be able to get nearer to the ideal fish diet "for the poor." At present few but munitioners and profiteers can afford to indulge in the luxury of fish, beyond an occasional fresh (?) herring or ditto mackerel.

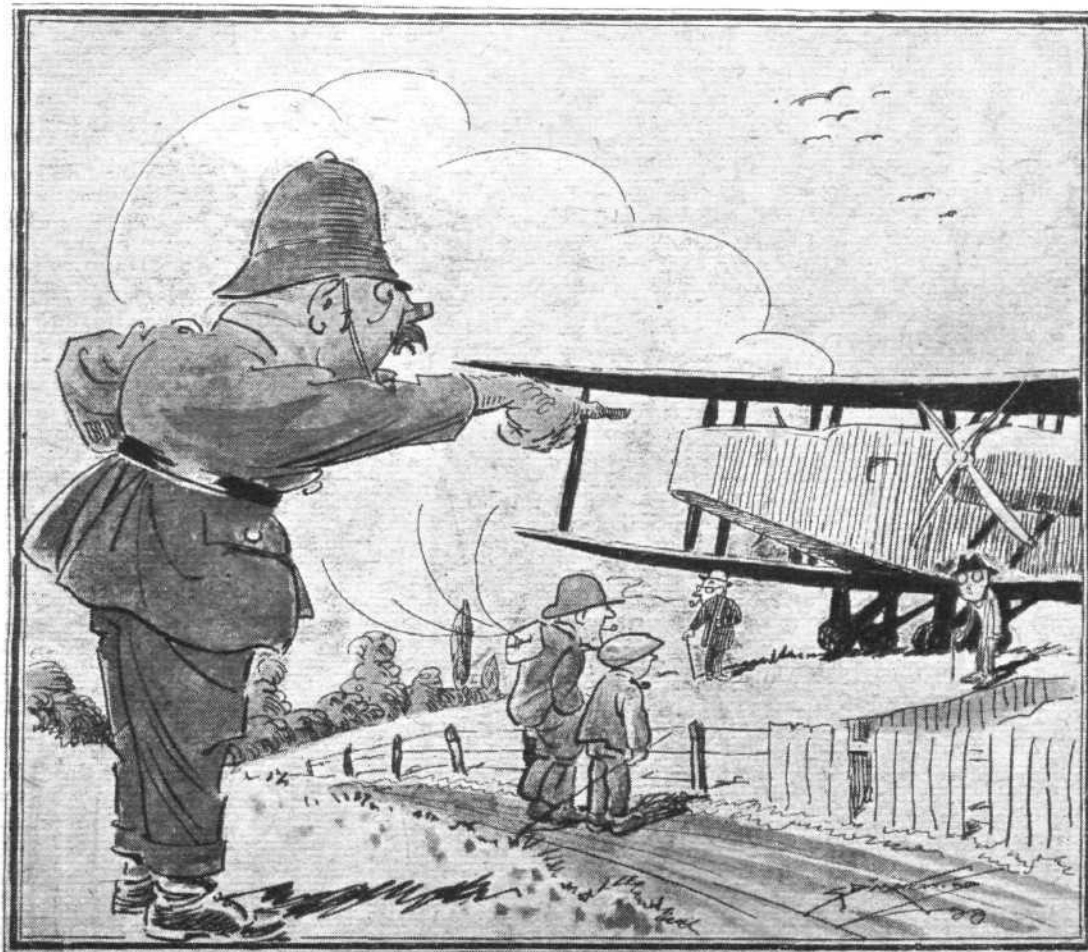
HERR EBERT who made himself and his Government scarce when Dr. Kapp carried out his Berlin bloodless coup, was quickly alive to the ruses of the aeroplane under the new conditions. To encourage the general strike which he had brought into operation by way of a counter-stroke to the Kapp conspirators, Ebert sent aeroplanes over Berlin with proclamations urging the strikers to persevere. This was, it appears his only weapon against the "new Government," but apparently it was so effective that having raised the hydra-headed strike monster, he has since found it to be a devouring sort of beast which seeks to dominate his own Government or any other old *régime* which happens in the scramble to get to be top dog. Frankensteins are ugly customers to regulate once they really get going.

THERE is certainly nothing of the pessimist about Maj. Rudolf Schroeder, the American pilot, whose amazing descent after his 36,000 ft. altitude record we made note of last week. Although he is still very weak from that experience, when his eyes became frozen, he hopes to be soon physically fit to make another great effort. He has already decided to make another attempt to reach the altitude of 50,000 ft., in the hope of finding trade winds blowing west and east at between 200 and 300 miles an hour. Maj. Schroeder believes that the future of aerial rapid transit lies in taking advantage of the high velocity breezes and the rarefied atmosphere seven miles above the earth's surface. He contemplates for his next altitude flight enclosing himself in a glass case with oxygen

tanks in his 'plane, convinced that he will reach a height of 50,000 ft.

We sincerely wish him luck in his bold missionary work in the cause of aviation, which recalls work of a similar character in the past, before the advent of the internal combustion engine, when air-travelling enthusiasts had to content themselves with "sailing" or rather drifting with any old winds they could catch. In fact, the achievement of Maj. Schroeder was even surpassed in those days as to height, by the late Mr. James Glaisher, F.R.S., who with Mr. Coxwell on September 5, 1862, ascended in a balloon from Wolverhampton, and reached the height of 37,000 ft., or fully seven miles. In referring to this event, Mr. P. H. Ditchfield writes that "On that occasion Mr. Glaisher was reduced to unconsciousness, and his companion lost the use of his hands, and only just succeeded in seizing the cord of the valve with his teeth, releasing the gas and causing the balloon to descend. In the days of my youth I often heard Mr. Glaisher, who was an old friend, describe this thrilling experience and exciting adventure, and an account is given in 'Travels in the Air,' a book written by Mr. Glaisher and the French aeronauts, Camille Flammarion, W. de Fonereille, and Gaston Tissandier, edited by Mr. Glaisher and published in 1871. While honouring the bravery and brilliant achievement of this gallant American, Maj. Schroeder, it is well that the heroism of the pioneers of the conquest of the air should not be forgotten."

As an immediate result of Major Schroeder's adventure, and the possibility of taking advantage of the East to West "trade winds," blowing at the 36,000-ft. level at the rate of from 100 m.p.h. to 300 m.p.h., prophets as to the future are already busy. It is claimed by "American Air Service officials" that in the near future the distance of 2,400 miles between New York and San Francisco, will be covered in 10 hours. In this connection, tests are to be made shortly with a semi-rigid balloon, which the New York *World* announces is already perfected to withstand great pressure at high altitudes. Major Schroeder's flight is said to have removed the last obstacle to a successful test by proving the value of a device designed to keep the engines running long enough to drive the balloon to the necessary altitude. The new balloon is 686 ft. long, its envelope being drawn over a frame of aluminium steel, with a capacity of 1,000,000 cub. ft. of helium gas. It is fitted with four engines of 400 h.p. each.



"Hi! You there—Put that Handley Page down!!"

AIRSHIP MACHINERY, PAST EXPERIENCE AND FUTURE REQUIREMENTS

A PAPER under the above title was read by Maj. C. F. Abell, O.B.E., before the Royal Aeronautical Society on March 17, 1920. Owing to lack of space we are unable to publish the paper in full, and must confine ourselves to giving the last part, containing the conclusions which Maj. Abell has drawn from the data dealt with in the first part of the paper.

The object of the paper, the lecturer said, was "to set out in simple form a description of the various types of machinery used during the War in airships, so that the very wide experience gained in the 3,000,000 miles flown, largely no doubt in small ships, may be of some value to those interested in the design of ships of more ambitious lines."

Maj. Abell dealt with the troubles experienced in the different types of airships, from the original "Blimps" (the S.S. type) through the Coastal, North Sea, S.S. Zero, S.S. Twin, Rigid R. 9, R 23, R 23 X, R 31 and 32, to the R 33 and 34.

The lecturer then stated the following requirements in engines and installations as they appear to the airship engineer, the point which he desired to emphasise being that airships have peculiarities of their own, and that engines which are perfectly satisfactory for other services are not necessarily suitable for airship work.

The Engine

This should be a single line engine of six cylinders, the reasons for this demand for a single row of cylinders being that an engine of this type gives a greater degree of accessibility; that the exhaust piping arrangement is simplified; and that the space available in a gondola of a certain size is more with this type than with a "Vee engine."

Cylinders.—These should be made separately and should all be interchangeable. In case of a collapsed piston and cylinder badly scored, the engine with separate cylinders can obviously be overhauled in less time than one having cylinders cast in pairs. There should be no water pipes connecting the cylinders, as these interfere with their removal.

Valves.—These should be fitted in the head of the cylinder and operated by overhead rockers, which in turn are operated by push rods from the camshafts. With this construction the timing is not interfered with when cylinders are removed.

Crank-case—Top Half.—should be fitted with inspection doors at each side, so that big ends can be rebuffed without much difficulty. If possible inspection doors should be fitted big enough to allow pistons and connecting-rods complete to be removed without disturbing the cylinders, but in cases where the cylinders are made easy to detach, there is less need for such large inspection doors. They should be big enough, however, to allow big ends to be refitted from the side, as distinct from the top of the crank-case. The camshafts should be fitted in the top half of the crank-case, one on each side of the engine, and the design of the case should be such that the crankshaft journals are supported in this half with bearing caps, and not in the lower half of the crank-case as in some engines. Cylinders should be secured by readily accessible bolts. Special spanners should not be required. There should be no oil ducts cast in the crank-case. The main oil lead should be bolted to the outside where it can be seen. The oil ducts supplying the main bearings should each be fitted with a gauze filter easily detachable.

The lower half should carry the oil pumps in an easily accessible position, but otherwise should be more or less an oil splash.

Magnetos should be driven from any convenient point, preferably from the camshafts. They should all be arranged to rotate in the same direction, to simplify the carrying of spares in the ship. There should be two magnetos per engine. A flexible coupling should be fitted, provided with a method of quick adjustment of the timing.

Lubrication System should be of the "dry base" variety. There should be two pumps for draining the base and one supply pump. The scavenging pumps should be fitted one at each end of the oil base-chamber, so as to give efficient drainage when the ship is at a steep angle. The supply pump should also be fitted in the base and could be driven by the same gear as the other pumps, but must be readily accessible.

All crankshaft and connecting-rod bearings should be oiled under pressure.

Water Pump should be centrifugal, and so fitted that it can be instantly replaced if necessary. The packing gland should be arranged, of course, on the suction side and so that it can be repacked with engine running if required; it should

not be possible for any leakage from this gland to find its way into the engine interior.

Carburettors and Induction Pipes.—Carburettors should be fitted in a high position on the engine so as to interfere as little as possible with the access to inspection doors. Induction pipes should be fitted with efficient flame baffles. All carburettor controls should be integral with the engine. Carburettor drains and overflows should be carried overboard well aft.

Safety Devices should be employed whereby either lack of oil pressure or excessive speed would stop the engine at once by cutting off the fuel supply at the jet. It is important that this control should operate on the fuel and not on the ignition, as when an engine which is working under heavy load is switched off it carries on self-igniting and eventually comes to rest after running astern violently for a few revolutions. The effect of this on the transmission might be very serious, and in addition the running astern would fill the gondola with exhaust fumes, which might easily gas the mechanic if he happened to have the windows shut.

Starting Gear.—A starting gear of some description will, of course, be necessary, and this problem becomes one of difficulty when a big bore engine of few cylinders is contemplated. The electric starter, employing a small high-speed motor, run from a battery, driving the engine round very slowly, through a reduction gear might be used, but there is the weight to be considered, which, if the battery is big enough to give sufficient turns to the really refractory engine, will be considerable. Further, the engine should be turned over sufficiently quick to pick up fuel from the jets.

The starting apparatus recommended is the suction-pump starter as fitted to the engines in the German airships. This apparatus has many advantages. It is simple and effective, light, requires no external doping, is safe, as it operates by suction; and, therefore, the risk of petrol vapour escaping and settling in the bottom of the gondola is reduced to a minimum, and it does not set a limit to the number of starts. A brief description may be of interest. By very simple mechanical means all the valves in the engine are lifted together about 3/32 in. from their seatings, and simultaneously the exhaust pipe is closed to the atmosphere and opened up to a large diameter hand-operated suction pump, the working of which draws air and petrol from the carburettors into all cylinders. After a few strokes of the pump, the valves are reset and the engine may be started by hand magneto, the valve in the exhaust pipe having been reopened to atmosphere.

The exhaust manifold should, of course, be efficiently cooled. Water cooling has disadvantages as regards weight, and the fact that the radiator has to be increased in size to such an extent to provide the additional cooling required. An air-cooled exhaust system might be satisfactorily arranged by providing suitable ribs on the manifold, enclosed in a fairing, and utilising the exhaust outlet from the silencer to create an induced draught.

All exhaust joints should be recessed, and the exhaust washers should fit these recesses accurately, so that a washer blown out is quite impossible. Further, in a suction starting system as described above, it becomes increasingly important to have sound exhaust joints.

As regards future requirements in engines, it is thought that the possibility should be considered of using engines of 500 to, say, 1,000 h.p., driving propellers at a distance of, say, 50 ft. as a maximum. An arrangement such as this would enable the heavy gondolas to be carried in that position on the hull, which the constructional engineers consider to be the best, and the propellers would be driven through shafts at various heights up the side of the hull.

Installation

The engine seating in the gondola should be arranged to give free access to oil pumps, and to the bolts securing the lower half of crankcase, and there should be sufficient room in the well under the engine to allow the bottom half to be lowered and drawn out from forward. The gear-box should be situated well away from the stern of the gondola, so as to be accessible, and to allow the gondola to be streamlined off.

The radiator should be fitted aft, as close to the propeller as possible, so that adequate cooling is obtained at the slowest air speeds of the ship. This position will be found to enable the size of the radiator to be reduced considerably.

The transmission shafting should, of course, be well provided with flexible joints, of some very simple form. The

spherical splined type is suggested as these are very simple and reliable, and are very noisy if any periods are encountered in the engine or transmission, which noise will tend to prevent an engineer holding on to a period any longer than absolutely necessary.

The reduction gear-box should be of plain spur-wheel type provided with pump lubrication. Provision should be made for the easy detachment of driving or driven wheels for replacement. In reversing boxes, the oil pump should, of course, be driven from the driving-shaft, so that oil pressure is maintained when going astern.

The propeller brake should be fitted on the tail shaft, so that the propeller is under control even when the gear is in neutral.

The practice of using two engines to drive one propeller through gears is thought not to possess sufficient advantages to justify it.

No doubt the big diameter slow-running propeller which it is possible to use with this arrangement is more efficient, but it is a very debatable point whether the gain in efficiency is worth the extra complication entailed. Further, the running of two engines geared together in this manner is by no means always satisfactory, as it is so difficult to synchronise them, and extended running of them not synchronised leads to vibrations and strains being set up, broken pipes, etc. One engine in each gondola is sufficient, for if two are used, the size of the car at once becomes prohibitive, at least if accessibility to the engines is fully considered.

All filters should be, of course, in duplicate, so that one may be cleaned while the other is in use.

Valves should be fitted in both suction and outlet water pipes near the engine, so that in case of breakdown the engine may have its cylinders removed without losing a great deal of water.

A petrol flowmeter should be fitted so that the engineer can see at a glance his fuel consumption, and this will help him in stopping loss of petrol overboard if a carburettor float punctures.

All thermometers, pressure gauges, and other instruments should be grouped together on a board fitted to the side of the gondola. As little as possible should be attached to the roof, as this should be easily detachable for the purpose of shifting engines, etc., when required.

Engine-Power and Speed

No suggestion has been made as to the horse-power or r.p.m. required of the engine. Broadly speaking the former should be as high as possible, the latter as low. It is thought that 400 h.p. at 1,400 revolutions would be a useful all-round engine.

Of course, the engine-speed at 1,400 mentioned above, almost definitely calls for a reduction gear if the propeller is to be reasonably efficient, but the sooner the gear-box is discarded the better.

Too much stress cannot be laid on the importance of being

able to carry out quite extensive refits in the air. Repairs of the order of fitting a new connecting-rod should be possible in, say, a period of four hours while under way.

Close attention should be given to the design of the engine-seatings and gondola generally so that the fitting of a complete new machinery installation is, at the outside, no more than the work of one day. As an instance of this, it was found possible to change an engine in the N.S. class of ship in six hours' work. It is, of course, a far more complicated job to change a set of machinery of a rigid ship, with its gear-boxes, etc., but nevertheless it is thought that if universal joints and other details in the transmission and engine and gear-box seatings are of suitable design, it should not be necessary to do any lining-up at all.

In the engine design, more importance is thought to attach to fuel economy at all speeds than weight per b.h.p., because of the length of flight the ship may be called upon to carry out, estimated at 100 hours.

The question of recovery of water from the exhaust gases is a most important one, and it is thought that no expense should be spared in the carrying out of experiments on this subject.

It is understood that an engine of large output at a low speed of revolution is now in its experimental stage. In the event of this proving a success, it would appear that the abolition of the reduction gear-box is in sight. Attention should, therefore, be given to the question of a satisfactory form of propeller with swivelling blades. A satisfactory reversible propeller would have further advantages in the ability to adjust the pitch for varying conditions.

With regard to the question of the fuel arrangements, it would appear that the present system, which entails a great deal of manual labour, is not satisfactory, for several reasons. It is slow in operation, both in re-fuelling the ship, and in trimming during flight, and it definitely calls for extra men in the crew, who could be dispensed with if the system were made more automatic in its action. The suggestion is made that experiments be carried out in connection with propeller drive petrol pumps, several of which could be fitted along the keel on hinged arms so that they could be swung into the ship when not required.

With regard to the type of fuel used, it is thought that the question of paraffin should be thoroughly investigated, since by its use the danger of fire would be reduced to the minimum, and also the question of its cost renders it attractive. It is admitted that the weight of a 500 h.p. engine designed for paraffin would at the present day appear excessive, but for future requirements with, say, a ship of 10,000,000 cub. ft., it might be found practicable to employ machinery much heavier than is at present possible.

I am indebted to the Air Ministry for permission to publish the photographs, and to Messrs. Wolseley, Sunbeam, and Armstrong Whitworth for their co-operation in supplying photographs and detailed information of various airship components.

CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

PARACHUTES

[2005] I must apologise to Mr. E. E. Smith for having implied that no human drop had been made with his parachute, and at the same time congratulate Capt. Wilson, M.C., for his pluck in making the first jumps with a parachute of this type.

As to a low-altitude competition being a duel to the death as Mr. Smith implies, I may say that Mr. Smith, when an employé of the Guardian Angel Co., personally fixed my harness on and assisted me in jumping off the Tower Bridge, a height of only 150 ft.

Had he had any doubts as to the success of the experiment, he ought not have been a party to it, and having assisted in and witnessed its successful issue, he ought not, at this late date, to imply that a low-altitude competition means the killing or maiming of one of the competitors, for it is obvious that drops below 150 ft. must be made over water and become virtually high dives.

As the life-line, rigging and silk of a parachute are about 70 ft. long, no packed parachute can open in much less than a 100-ft. drop for the aviator, but the Guardian Angel is the only parachute I know of that can be relied upon with any degree of confidence to open within 150 ft.; as far as I can see and have seen, all other parachutes are erratic in that

respect, and that really is a very important point when parachutes are being used at low altitudes.

Parachute reliability is synonymous with repetition of performance under identical conditions.

March 17

T. ORDE-LEES

CASTROL "R" AND A WARNING

[2006] Our attention has been drawn to the fact that a quantity of Castrol "R," the aero-engine lubricant manufactured by us, is being offered for sale by various firms who have bought it from the surplus stores of the Royal Air Force. Many of these drums have been travelling abroad or stored at different depôts and aerodromes for a considerable time, exposed to all kinds of weather and often to rough handling in course of transit.

As it is of supreme importance to us to maintain a reputation for the highest possible standard of quality in all our products, we shall esteem it a favour if you will allow us to state, through the medium of your journal, that we cannot accept any responsibility for the condition of any lubricant bearing our name which is not purchased direct from us or from our authorised agents.

C. C. WAKEFIELD AND CO., LTD.,
W. R. GRAHAM, Managing Director

March 17.

THE ROYAL AIR FORCE

London Gazette, March 9.

Permanent Commissions.

Flight-Lieut. A. F. Brooke (A) is granted a permanent commn. in the rank stated, with effect from Aug. 1st, 1919.

The notification in the *Gazette* of Aug. 1st, 1919, appointing Lieut. D. E. D. Taylor, M.C. (A.) to a permanent commn., is cancelled.

Flying Officer T. G. Poland, M.C. (A.), resigns his permanent commn., with effect from Mar. 10th.

Short Service Commissions.

The following officers have been granted short service commns. in the ranks stated. Except where otherwise stated, the commns. will have effect from Mar. 9th, and the officers will retain their seniority in the substantive rank last held by them prior to the grant of the short service commn.:

Flight-Lieuts.—J. C. Slessor, M.C. (A.); Feb. 24. L. E. Taylor, M.B.E. (T.).

Flying Officer (from Pilot Officer).—W. E. Harper, M.C. (S.O.); seniority Mar. 9th.

The notifications appearing in the *Gazettes* of the dates indicated, appointing the following officers to short service commns., are cancelled:—Flying Officer F. Susano, M.B.E. (T.); Sept. 12th, 1919. Flying Officer V. G. Austen (A.); Sept. 16th, 1919. Flight-Lieut. A. Roulstone, M.C. (A.); Flying Officer W. Bagnall (T.), Flying Officer F. H. Whitmore, D.S.C. (T.); Oct. 24th, 1919. Flight-Lieut. C. B. Belt, M.B.E., M.C., D.C.M. (Ad.); Nov. 11th, 1919.

Obs. Officer W. L. Rutledge, A.F.C., M.M., relinquishes his short service commn. at his own request; Jan. 1 (substituted for notification in the *Gazette* of Feb. 17). Flying Officer E. C. McK. Martyn (T.) resigns his short service commn; Mar. 10.

The classification of Flight-Lieut. T. G. Bowler (Ad.) is as now described, not (A.) as stated in the *Gazette* of Oct. 24, 1919.

Flying Branch.

Obs. Officer H. W. Clayton to be Obs. Officer, from (S.O.); Feb. 19. Sec. Lieuts. to be Lieuts.:—(Hon. Lieut.) L. Darvall, M.C.; June 30, 1918. V. O. Reynolds; Aug. 29, 1918. L. J. W. Ingram; Dec. 21, 1918 (since demobilised). A. E. Watson; April 14, 1919 (substituted for notification in the *Gazette* of Feb. 10). C. F. Cogswell; May 17, 1919. Pilot Officers (O.) to be Obs. Officers.:—J. R. D. Goadsby, T. W. Hayes; Jan. 27.

Lieut. H. V. Geary, M.C., relinquishes his R.A.F. commn. on appointment as a probationer for permanent commn. in the Indian Army; Dec. 18, 1918.

The following relinquish their temp. R.A.F. commns. on return to Army Duty:—Sec. Lieut. J. H. Blaschek (Sec. Lieut., R.F.A. (S.R.)); Dec. 6, 1918. Sec. Lieut. (Hon. Lieut.) A. McK. Gillespie, M.M. (Lieut., Manitoba R.); Feb. 7, 1919. Capt. A. G. Henshaw (Lieut. (actg. Capt.)), E. Ont. R.); Feb. 24, 1919.

Sec. Lieut. (Hon. Lieut.) J. T. I. Brownlee relinquishes his commn. on ceasing to be employed, and is permitted to retain the rank of Lieut.; Aug. 25, 1919.

(Then follow the names of 52 officers who are transfd. to the Unemployed List under various dates.)

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—W. M. Anderson (R. Sussex R., T.F.) (contracted on active service); Mar. 18, 1919. R. G. Pratt; July 4, 1919 (substituted for notification in *Gazette*, Apr. 8, 1919). P. W. D. Thurley (contracted on active service); Mar. 2.

Sec. Lieut. A. A. Mitchell relinquishes his commn.; Sept. 6, 1919.

The surname of Lieut. D. P. Rees is as now described, and not as in *Gazette*, Aug. 26; the surname of Lieut. C. J. Thomsen is as now described, and not as in *Gazette*, Dec. 19; the Christian names of Edwin George King are as now described, and not as stated in *Gazette*, Oct. 15, 1918.

The notifications in the *Gazette* of June 11, 1918, concerning A. E. Ash; *Gazette*, Aug. 1, 1919, Sec. Lieut. J. H. Moore; *Gazette*, July 18, 1919, Lieut. R. G. Pratt; *Gazette*, July 18, 1919, Lieut. H. L. Yates; and *Gazette*, July 15, 1919, Sec. Lieut. G. A. Munro are cancelled. *Gazette*, Aug. 5, 1919, to stand.

Administrative Branch.

Sec. Lieuts. to be Lieuts.—G. R. Hill; Mar. 13, 1919 (since demobilised). R. A. C. Craddock-Hartopp; Apr. 23, 1919 (since demobilised) (substituted for notification in the *Gazette* of Feb. 17).

Pilot Officers to be Flying Officers.—(Actg. Flight Lieut.) F. T. L. Avis, (Actg. Flying Officer) F. C. Bird, (Actg. Flying Officer) E. G. Boone, (Actg. Flying Officer) W. G. Chate, J. P. A. Donaghy, H. C. F. Ellis, C. Freeman, (Actg. Flying Officer) F. W. Healey, (Actg. Flight Lieut.) C. T. Johnson, (Actg. Flying Officer) L. J. Marden, B. A. Matthews, W. B. T. O'Sullivan; Oct. 1, 1919. T. Surr; Dec. 17, 1919.

Flying Officer J. W. W. Tregale relinquishes his temp. R.A.F. commn. on reversion to I.A.R.O.; Feb. 16, 1919.

(Then follow the names of 10 officers who are transfd. to the Unemployed List under various dates.)

Maj. (actg. Lieut.-Col.) L. A. Burrowes, O.B.E. (Middx. R., Res. of Officers) relinquishes his commn. on account of ill-health contracted on active service; Mar. 2.

The surname of Sec. Lieut. W. Comb is as now described, and not as in *Gazette*, Mar. 28, 1919.

The notifications in the *Gazettes* of Mar. 21, 1919, and Apr. 8, 1919, concerning Sec. Lieut. (actg. Capt.) F. R. T. Pearson; *Gazette*, July 11, 1919, Lieut. (actg. Capt.) F. R. T. Pearson; *Gazette*, Feb. 21, 1919, Sec. Lieut. J. McLennan; *Gazette*, Nov. 4, 1919, Sec. Lieut. A. A. Mitchell are cancelled.

Technical Branch.

Flying Officer R. J. Sladden, M.B.E., D.C.M., relinquishes the grading for pay and allowances as Flight Lieut. on ceasing to be employed as Flight Lieut. (A.); Feb. 25.

Sec. Lieut. C. J. Ashdown to be Lieut.; Mar. 21, 1919 (substituted for notification in the *Gazette* of Apr. 11, 1919). Pilot Officers to be Flying Officers:—G. V. Russell (substituted for notification in the *Gazette* of Oct. 24, 1919). J. R. Starck; Oct. 1, 1919. W. N. Doble; Jan. 1. Sec. Lieuts. to be Lieuts. without pay and allowances of that rank:—(Hon. Lieut.) W. Rose; June 9, 1918. L. H. J. Bouchier; July 21, 1919. Pilot Officers to be Flying Officers. without pay and allowances of that rank:—E. A. Blundell, J. P. Hinks, F. T. Jacobs, A. M. Webster, R. Tuck; Oct. 1, 1919. H. T. Miles; Nov. 22, 1919.

The following relinquish their temp. R.A.F. commns. on return to Army Duty:—Flying Officer H. E. Haslehurst (Capt., L'pool R.); Nov. 8, 1919 (substituted for notification in the *Gazette* of Dec. 30, 1919). Flight Lieut. R. Collis (Lieut., E. Surrey R.); Feb. 25.

(Then follow the names of 12 officers who are transfd. to the Unemployed List under various dates.)

The following relinquish their commn. on account of ill-health, and are permitted to retain their rank:—Capt. A. N. Pennel; Mar. 2. Lieut. A. M. L. Nicholson (cont. on active service); Mar. 2. Sec. Lieut. W. Haddon (cont. on active service); Mar. 1.

Pilot Officer C. W. Brown (Sec. Lieut., Gen. List) relinquishes his temp. commn. on retirement from the Army; Mar. 10.

Lieut. A. E. Franklin is dismissed the Service by sentence of a Gen. Court-Martial; Dec. 24, 1919.

The notification in *Gazette* of May 23, 1919, concerning Sec. Lieut. A. Broadley is cancelled.

Memoranda.

Capt. W. J. King (date of 1st commn., Sept. 6, 1916); to be actg. Maj. while employed as Area Representative on Quartering Committees; May 1, 1919.

(Then follow the names of 3 Overseas Cadets granted temp. commns., and 375 Canadian Cadets granted hon. commns. as Sec. Lieuts., and three Proby. Flight Officers are granted hon. commns. as Sec. Lieuts.)

(Then follow the names of 6 Cadets granted hon. commns. as Sec. Lieuts.) Sqdn. Leader F. V. H. Mackenzie (Comdr., R.N.) relinquishes his temp. R.A.F. commn. on return to the Naval duties; Feb. 26.

Sec. Lieut. G. C. Boyer relinquishes his commn. on ceasing to be empld. and is permitted to retain his rank; April 2, 1919.

(3 officers transferred to the Unemployed List.)

The notification in *Gazette* of May 9, 1919, concerning Capt. W. J. King, D.C.M., is cancelled.

London Gazette, March 12.

Flying Branch.

Lieut. H. Haycock, M.C., to be actg. Capt. while empld. as Capt. (A.) (from Mar. 27, 1919, to Apr. 30, 1919), and graded for purposes of pay and allowances as Capt. while empld. as Capt. (A.) (from May 1, 1919, to July 14, 1919).

The following relinquish their temp. R.A.F. commns. on return to Army duty:—Sec. Lieut. (Hon. Lieut.) A. L. Rice (Lieut., Quebec R.); Dec. 11, 1918; Lieut. A. C. Lee (Lieut., C. Ont. R.); Feb. 28, 1919. Sec. Lieut. G. Jacob (Lieut., E. Yorks. R.); April 14, 1919. Maj. J. S. Scott, M.C., A.F.C. (Maj. (actg. Lieut.-Col.), Can. F.A.); May 30, 1919. Sec. Lieut. D. R. L. Raiton (Lieut., York and Lanc. R.); June 24, 1919 (substituted for notification in *Gazette*, Mar. 2); Sqdn. Leader R. E. Orton (Capt., E. Lancs. R.); Dec. 4, 1919 (substituted for notification in *Gazette*, Jan. 23). Flying Officer W. H. Davies (Lieut., R. Scots); Feb. 3. Flying Officer C. L. Wauchope (Capt., Northern R.); Feb. 28. Lieut. E. A. Sewell relinquishes his commn. on ceasing to be empld.; Feb. 22.

(Then follow the names of 23 officers who are transfd. to the Unemployed List under various dates.)

The following Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their ranks:—T. L. Johnson (cont. on active service), Sept. 11, 1919. I. W. Awde (caused by wounds), C. W. Murphy (cont. on active service); Mar. 5.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—S. A. Goodman (cont. on active service); Mar. 4. J. Thompson; Mar. 8 (substituted for *Gazette*, Nov. 12, 1918).

Sec. Lieut. D. W. E. G. Phillips is cashiered by sentence of a General Court-Martial; Oct. 29, 1919.

The surname of Lieut. W. Shaw-Thompson is as now described, and not as in *Gazette*, Feb. 24. The initial of Sec. Lieut. N. Farson is as now described, and not as in *Gazette*, Mar. 2. The notifications in *Gazette*, July 18, 1919, concerning Lieut. T. B. Bruce (*Gazette*, Feb. 24, to stand), and *Gazette*, Mar. 28, 1919, Sec. Lieut. A. V. Redwood (*Gazette*, Apr. 1, 1919, to stand), are cancelled.

Administrative Branch.

Sec. Lieut. D. D. Carcary is graded for purposes of pay and allowances as Lieut. while employed as Lieut., from Mar. 25, 1919, to Aug. 9, 1919.

The following relinquish their temp. R.A.F. commns. on return to Army Duty:—Sec. Lieut. A. T. Bissell (Sec. Lieut. (Serv. Bn.), H.L.I.); June 29, 1918. Sec. Lieut. E. J. D. Hoare (Sec. Lieut. (Service Bn.), Bord. R.); Aug. 10, 1918. Flying Officer J. Hawke (Lieut., Ches. R.); Mar. 4.

(Then follow the names of 11 officers who are transfd. to the Unemployed List under various dates.)

Technical Branch.

Lieut. (Hon. Capt.) (actg. Maj.) C. L. Hardy relinquishes the actg. rank of Maj. on ceasing to be employed as Maj.; July 22, 1918. Sec. Lieut. A. Endicott (Hamps. Aircraft Pk.) (T.F.) relinquishes his commn. on ceasing to be employed, and is permitted to retain his rank; June 28, 1919.

(Then follow the names of 11 officers who are transfd. to the Unemployed List under various dates.)

The following relinquish their commns. on account of ill-health contracted on active service, and are permitted to retain their rank; Mar. 4:—Lieut. C. S. Goode, Sec. Lieuts. H. E. H. Dering; Mar. 4. W. F. Bate; Mar. 6.

The notification in *Gazette*, Mar. 2, concerning Lieut. E. M. Leete, is cancelled. Notification in *Gazette*, Oct. 21, 1919, to stand.

Medical Branch.

Flight Lieut. H. W. Scott to be actg. Sqdn. Leader whilst employed as Sqdn. Leader; Mar. 8.

Memoranda.

(Then follow the names of 494 Canadian Cadets who are granted hon. commns. as Sec. Lieuts.)

Group Capt. J. H. W. Becke, C.M.G., D.S.O., A.F.C., retires on retired pay at his own request, and retains the rank of Air Commodore; Feb. 29 (substituted for notification in the *Gazette* of Mar. 2).

London Gazette, March 16.

The name of Flying Officer F. Susans, M.B.E. (T.), is as now described, and not as stated in the *Gazette* of Mar. 9, wherein this officer's appointment to a Short Service Commn. was cancelled.

Flying Branch.

Lieut. D. H. Oliver, M.C., is graded for purposes of pay and allowances as Capt. whilst employed as Capt. (A.), from May 7, 1919, to May 28, 1919. Sec. Lieut. F. J. Russell to be Lieut.; May 27, 1919 (since demobilised).

Pilot Officers to be Flying Officers:—S. Vaughan; Sept. 11, 1919. S. T. Clemens (substituted for *Gazette* of Feb. 17). T. O. Oakes; Oct. 1, 1919. Pilot Officers (O.) to be Obs. Officers.:—G. J. Ross; Oct. 1, 1919. W. A. Spranklin; Dec. 24, 1919. J. B. V. Glyde; Jan. 27.

Flying Officer C. E. H. Allen, D.F.C., is restored to full pay from h.p. list;

Feb. 18. Lieut. F. C. C. Yeats-Brown (Capt., I.A.) relinquishes his temp. R.A.F. commn. on reversion to I.A.; Aug. 13, 1919 (substituted for *Gazette* of Sept. 2, 1919). The following relinquish their temp. R.A.F. commns. on return to Army Duty:—Lieut. (Hon. Capt.) L. G. Bain (Lieut. (temp. Capt.), R. Newfidd. R.); Mar. 4, 1919. Pilot Officer H. Mercer, M.D., D.F.C. (Lieut., Devon R.). Flying Officer G. B. C. Way (Lieut., S. Lancs. R.) Mar. 4. Sec. Lieut. H. H. Fox relinquishes his commn. on ceasing to be employed; May 28, 1919.

(Then follow the names of 47 officers who are transfd. to the Unemployed List under various dates.)

The following Sec. Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are permitted to retain their rank:—F. C. Barlow; Mar. 9. A. C. New; Mar. 11.

The surname of Sec. Lieut. T. G. Keir is as now described, and not as in *Gazette*, Feb. 23.

The notifications in *Gazette*, Oct. 17, 1919, concerning Capt. C. N. Seedhouse (*Gazette*, Oct. 24, 1919, to stand). *Gazette*, June 17, 1919, Sec. Lieut. H. H. Fox are cancelled.

Administrative Branch

Flying Officer G. W. C. Dawson to be Flying Officer, from Unemployed List; Dec. 20, 1919. (Substituted for notification in *Gazette*, Feb. 10). Sec. Lieut. (Hon. Lieut.) S. P. Jacoby to be Lieut.; Nov. 14, 1918 (since demobilised). Pilot Officer F. E. Hudson to be Flying Officer; Oct. 1, 1919. Flight Lieut. H. Dunster (Lieut., R.N.) relinquishes his temp. R.A.F. commn. on return to Naval duties; Mar. 11.

(Then follow the names of 7 officers who are transfd. to the Unemployed List under various dates.)

Technical Branch

Capt. I. H. W. Barnato to be Capt., Grade (A.), from (A.); May 17, 1918 (since dead). Lieut. R. G. Dalziel to be Lieut., Grade (A.) from (A.); Nov. 1, 1918 (substituted for *Gazette* of Nov. 22, 1918). Sec. Lieut. W. H. Fearnside to be Lieut. (Grade B.); Mar. 5, 1919 (substituted for *Gazette* of Apr. 11, 1919).

Pilot Officer J. Roberts to be Flying Officer, Grade (A.); Oct. 1, 1919 (since demobilised). Sec. Lieuts. to be Lieuts., without pay and allowances of that rank:—L. G. Martin; Apr. 2, 1918. E. G. Jameson; June 6, 1919 (since demobilised). Pilot Officers to be Flying Officers, without pay and allowances of that rank:—A. Gillingham (since demobilised), G. Lee, A. H. Mitchell (substituted for notification in the *Gazette* of Jan. 20), F. W. Wrench Oct. 1.

(Then follow the names of 27 officers who are transfd. to the Unemployed List under various dates.)

The surname of Lieut. H. Hilsdon is as now described, and not as in *Gazette* of May 23, 1919.

The notifications in *Gazette* of Nov. 14, 1919, concerning Lieut. J. McKeown (*Gazette* of Feb. 6, to stand); *Gazette*, Oct. 22, 1918, Sec. Lieut. T. Mitchell; and *Gazette*, Nov. 23, 1919, Sec. Lieut. J. D. Graham, are cancelled.

Memoranda

(Then follow the names of 3 Overseas Cadets granted temp. commns., 3 Overseas Cadets granted hon. commns., 6 Cadets granted hon. commns., and 463 Canadian Cadets granted hon. commns. as Sec. Lieuts.)

The following relinquish their commns. on ceasing to be employed:—Temp. Hon. Capt. F. Hudson; Apr. 30, 1919. Temp. Hon. Lieut. C. L. Sherratt; Jan. 15 (substituted for notification, the *Gazette* of Feb. 3). Hon. Sec. Lieut. C. Disney relinquishes his commn. on ceasing to be employed, and is permitted to retain his rank; May 2, 1919.

(Then follow the names of 4 officers who are transfd. to the Unemployed List under various dates.)

London Gazette, March 19

Flying Branch

P.F.O. D. Reekie (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (A.); May 1, 1918. The following relinquish their temp. R.A.F. commns. on return to Army Duty:—Lieut. A. K. Matthews (Lieut., R.A.); July 18, 1918. Sec. Lieut. (Hon. Lieut.) W. J. Wilson (Capt., Can. Forestry Corps); Dec. 20, 1918. Flight Lieut. F. W. Ward (Lieut., N. Staff. R.); Feb. 17. Sqdn. Leader V. A. Beaufort, O.B.E., M.C. (Capt., Devon. R.); Feb. 20.

(Then follow the names of 51 officers who are transfd. to the Unemployed List under various dates.)

The following officers relinquish their commns. on account of ill-health contracted on active service, and are permitted to retain their rank:—Capt. F. McD. C. Turner, M.C., D.F.C.; Mar. 12. Lieuts. G. E. Durrance and S. A. Martindale; Mar. 12.

Sec. Lieut. N. E. Ohman is antedated in his appointment as Sec. Lieut. (A.); May 31, 1918.

The notifications in *Gazette* of July 18, 1919, and Nov. 14, 1919, concerning Lieut. A. S. Selby (*Gazette*, July 1, 1919, to stand); *Gazette*, Jan. 13, 1919. Sec. Lieut. G. Parsons; *Gazette*, Aug. 29, 1919, Lieut. (Hon. Capt.) C. le Strange; *Gazette*, June 4, 1918, G. Smart (Sub-Lieut., R.N.A.S.); *Gazette*, June 6, 1919, wherein Sec. Lieut. A. C. Porter is transfd. to the Unemployed List, May 28, 1919, are cancelled.

Administrative Branch

Lieut. J. Keyes (Sec. Lieut., Gen. List) relinquishes his temp. R.A.F. commn. on ceasing to be employed; Mar. 20.

(Then follow the names of 9 officers who are transfd. to the Unemployed List under various dates.)

Lieut. N. J. P. Revington relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Mar. 13.

Technical Branch

Lieut. S. Field to be Lieut., Grade (B.), from (Ad.); Oct. 26, 1918. Lieut. H. Riches to be Lieut., Grade (A.), from (K.B.); June 1, 1919. Flying Officer C. E. Tidy to be Flying Officer, Grade (B.), from (Ad.); Feb. 9. Sec. Lieut. C. W. Bentley to be actg. Lieut. while employed as Lieut., Grade (A.); from July 26, 1918, to Feb. 1, 1919.

Sqdn. Leader G. E. Smith, O.B.E. (Capt., E. Yorks R.), relinquishes his temp. R.A.F. commn. on return to Army Duty; Nov. 16, 1919.

(Then follow the names of 19 officers who are transfd. to the Unemployed List under various dates.)

Maj. R. S. Rumbold (Lieut., Som. L.I.) relinquishes his commn. on retirement from the Army; Jan. 28. Flight Lieut. W. H. Clover is placed on the retired list; Mar. 20. The notification in the *Gazette* of Feb. 24, concerning Sec. Lieut. F. V. Wright, D.C.M., is cancelled (*Gazette*, Jan. 23, to stand).

Memoranda

J. P. B. Jeejeebhoy (late temp. Hon. Sec. Lieut., R.F.C., Gen. List) is granted the hon. rank of Capt.

(Nine Probationary Flight Officers granted hon. commns. as Sec. Lieuts.)

(Then follow the names of 19 Cadets granted hon. commns. and 381 Canadian Cadets granted hon. commns. as Sec. Lieuts.)

Lieut. H. G. Cox relinquishes his commn. on ceasing to be employed, and is granted the rank of Capt.; Oct. 15, 1919. Lieut. H. G. Stuart, M.C. (Sec. Lieut., R.A.S.C.), relinquishes his temp. R.A.F. commn. on retirement from the Army, and is granted the rank of Capt.; Mar. 19.

(Four officers transfd. to the Unemployed List.)

The notifications in the *Gazettes* of Mar. 2 concerning Lieut. H. G. Cox *Gazette*, Feb. 6, temp. Hon. Lieut. A. E. Kittell, are cancelled.



AVIATION IN PARLIAMENT

R.A.F. Chaplains

MAJ. BLAIR asked if the chaplains' branch of the Royal Air Force is to be continued; what is its annual cost; and whether the Army chaplains' branch could undertake the work?

Maj. Tryon: The cost of air pay and allowances of permanent and temporary chaplains for the coming financial year is estimated at £25,000 and of capitation payments to officiating clergy at £4,000. A separate chaplains' service for the Royal Air Force was organised and appointments made to it shortly after the Armistice, but the question of amalgamation with the Army chaplains' branch is being considered.

Discharged R.A.F. Officers and Flying Practice

MR. MADDOCKS asked the Under-Secretary of State for Air whether, in view of the fact that there are many experienced ex-flying officers completely cut off from all flying, he will consider the possibility of the Air Ministry arranging for pilots holding the Royal Air Force graduation certificate and Air Ministry civilian flying licence, and who have had sufficient experience, say, 200 hours' flying, to hire machines from certain aerodromes at reasonable charges, and so enable them, in the national interest, to preserve their flying knowledge?

Major Tryon: The desirability of preserving the flying knowledge obtained during the War by officers now discharged, has not been lost sight of. The proposal made by my hon. friend would be difficult to apply, but the object will, it is hoped, be attained by the opportunity which will be afforded to a number of such officers to join the Royal Air Force Reserve under the Regulations by which provision will be made for the necessary flying practice.

The Leeds to Holland Route

MAJOR BIRCHALL asked the Under-Secretary of State for Air whether it is intended to have a direct air route from Leeds to Holland via Hull?

Major Tryon: The establishment of a direct air route from Leeds to Holland via Hull depends largely on the provision of suitable types of aircraft. At present it is not considered that such a commercial route should be organised for land aircraft for the reasons given in my reply to the hon. and gallant Member for Central Hull (Lieut.-Commander Kenworthy), on the 11th of this month (Official Report, Col. 1556). If, however, a demand arises for the establishment of such a route for sea or amphibious machines, no difficulty is anticipated in setting up the necessary customs' aerodromes for such traffic.

R.A.F. Decorations

VISCOUNT CURZON asked the Under-Secretary of State to the Air Ministry whether the officers and men of the Royal Air Force mentioned in despatches for their services, whether working with the Royal Navy or the Army, will be awarded the bronze oak leaf similar to that awarded to the Army?

Major Tryon: The reply to my hon. and gallant friend's question is in the affirmative.

Disposal of Aeroplanes

LIEUT.-COL. SIR JOHN HOPE asked the Prime Minister whether, in view of the recent decision to sell all surplus aeroplanes to a private company for a fixed sum and half profits on resale, it is the intention of the Government to dispose of all other surplus war stores on a similar principle, and so terminate the cost of the Ministry of Munitions at an early date?

Mr. Kellaway: I have been asked to reply. The conditions of the sale referred to were exceptional in that there is not, for surplus aeroplanes, either the demand or the established market value which obtain in respect of most of the other commodities which the Ministry has to sell. It would not be in the interests of the Exchequer to apply generally to stores to which these conditions do not apply the methods and terms of disposal adopted in the sale in question.

Mr. Billing: Can the hon. gentleman say whether the question of half profits is to be based on the difference of price paid for the aeroplanes and the price at which they were sold, or the price of sale less the expenses of this private firm? If so, what steps does he propose to take to overlook the expenses of the firm?

Sir J. Hope: Does the hon. gentleman consider that half profits will amount to more than the £27,000,000 that the Ministry of Munitions is costing the country each year?

Mr. Kellaway: It would be a very unfair test to take the whole expenses of the Ministry and apply it to one single question. In reply to the hon. member (Mr. Billing) I may say that the Disposals Board will have the books and contracts before them.

Mr. Billing: Will the company be allowed their expenses from the prices paid before there is any further payment to the Government?

Mr. Kellaway: Of course, as to expenses, the Disposals Board will have the accounts before them.

Sir J. Hope: For what purpose does the Ministry now exist except for the sale of surplus stores?

Mr. Kellaway: The assets of stores amount to £180,000,000. The receipts average now between £4,000,000 and £5,000,000 per week, and it is unfair to refer to one particular transaction the whole of the expense in connection with these gigantic amounts.

Cairo-Baghdad Aerial Mail

In the course of discussion on Vote "A" of the Air Estimates in the House of Commons, on March 11, Major Tryon said they were going into proposals for the use of Service machines for communication between Cairo and Baghdad. They would carry mails, and there would be an arrangement by which the R.A.F. would be prepared to terminate the service at any moment in the event of the Post Office and civil firms coming to an arrangement to substitute a civil service.

THE NAVY AND THE AIR

MR. LONG, First Lord of the Admiralty, introducing the Navy Estimates in the House of Commons, on March 17, said he could assure all those who were profoundly interested in the Air Force and profoundly convinced that in the R.A.F. is to be found salvation for the future, that if they were not prepared immediately to accept as prudent all that had been advocated and suggested, it was not because they were too conservative, but because they were entitled, as Trustees for the Navy and the security of the country which the Navy means, to ask that they should get further and more powerful development before they took the view they were asked to take, of what, to a certain extent, was still a thing of the future! He wanted to make it perfectly clear that there was no intention whatever on the part of the Admiralty to depart from the policy laid down by the Government of keeping the Air Ministry an independent department, and that they should look to the Air Ministry for developments of air policy, the best machines and the method of training. He said some advocates went further and suggested where the two forces were combined the air commander should be commander of the naval forces. To that the Admiralty would offer the most strenuous opposition. They maintain that responsibility and command should go together; they are responsible for the Navy, and they cannot share that responsibility with anyone. It had also been suggested that if the time has not come, at any rate it has nearly arrived, when one Minister could represent the three Forces. Speaking for the Board of Admiralty, any proposal of that kind would be most strenuously resisted. They were not desirous of interfering with the duties, responsibilities, or rights of the Air Ministry, but they asked that they should be consulted as to what they wanted.

Sir Donald Maclean said that in no range of human achievements and promise was there anything approaching the immense possibilities of the air, and he asked the First Lord to keep an open mind and see that no natural prejudice affected the national needs in such a question.

Sir F. Flannery said he was one of those who had always been doubtful about the wisdom of an entirely separate Air Ministry. If they had a separate Air Ministry, it might foster the development and advancement of aviation, but it could not have executive control of the airships and aeroplanes which were necessary for the service of the Fleet. They could not have the command of the sea entrusted to other than naval officers.

Rear-Admiral Adair said that as they had accepted the Air Ministry as the providing branch for the Naval Air Force, they should insist on a naval representative on the Air Council, and naval constructors should be attached to the Air Ministry to look after the investigation of the real flying ships.

When the Estimates were considered in Committee, on March 18, General Seely moved to reduce the vote for men by 100, in order to draw attention to the neglect of the Air Arm by the Navy. He would give two instances. The first was the dropping of torpedoes from aircraft. It was only a short time ago that the problem was solved, and it was now quite easy to drop a torpedo from the air with as great accuracy as you could discharge it from a ship. No one could see what the effect of that must be upon our naval future, but the change was enormous and vital. Yet the Air Ministry had practically ceased to experiment in this most important question. The second instance was in connection with the Turkish troubles. He said we could have made as short work with Mustapha Kemal, as we did with the Mad Mullah, had the Navy been equipped by the Air Ministry with the appropriate number of aeroplane-carrying ships, seaplane-carrying ships, seaplane-carriers, and all the necessary paraphernalia for ensuring that our Sea Power had the long arm of the air ready to help them. The provision of aircraft with the Fleet at Constantinople was so lacking that it would not have alarmed the most pusillanimous Turk. While it would be foolish to have one Minister to preside over Admiralty, Army Council and Air Council, he believed that somebody, such as the Committee of Imperial Defence, with adequate powers, should be set up forthwith to see that there was no further waste of money or effort on account of a lack of proper co-ordination.

Mr. Long said the matter of a Committee of Imperial Defence was a matter for the Prime Minister to decide, but the Admiralty were anxious to have this Committee set up as rapidly as possible. They were extremely anxious, too, that apart from that Committee, there should be some definite arrangement under which the staffs of the great fighting departments should meet regularly for consultation, and to work out as far as possible a common policy.

Mr. Asquith deprecated the creation of an executive Minister of Defence who had been over Navy, Army and Air Force, but he took the view that they ought to have machinery for closer co-operation, and more continuous concentration of the staffs of the great defensive services. He pointed out that the Committee of Imperial Defence, over which he presided for ten years, was not an executive body, all responsibility resting with the heads of the fighting departments.

Mr. Lambert said that the Admiralty should have to go to the Secretary for War before it could order any aeroplanes seemed to him to be a matter which was lowering to the dignity of the Navy. If there was to be two Ministers for three Services, the head of the Air Ministry should be the First Lord of the Admiralty. They might as well put the artillery of the Navy under the Secretary of State for War as to put aircraft under him.

Capt. Wedgwood Benn said those who were interested in the Air Service were anxious to see that, because it was a junior service, it did not suffer in competition with the senior services. There was work which could be done with advantage by the Air Service, which ought not, by reason of some tradition, to be retained by the others. After referring to the meteorological and compass departments, he went on to point out the useful work which could be done by aeroplanes in charting and survey work. There was the work of the coastguard, which could be done by the Air Service. One machine and ten men could patrol a distance of 50 miles, and it would have the advantage of giving the pilots experience in flying over the sea. It might be that considerable economies could be effected by the re-arrangement of the duties falling to the three services; the Air Force might be able to take over part of the duties of others. But the Air Service could not be developed except by people whose whole thought and interest and career were wrapped up in the Air Service. It could not be developed as a side issue or a secondary occupation of people who, in their hearts, were either soldiers or sailors; they must have people whose whole allegiance was to the air. The Admiralty said that everything that floated must be under its command. He ventured to suggest that there were occasions on which it might be very proper for the Air Ministry to have the most free use and capability of development of flying things, independently of the Admiralty. There were some operations carried out in the air from ships which had nothing to do with the Admiralty or Fleet, some done in the service of the Army. He cited instances of the raids on Pola, carried out from Padua, the raids on Durazzo by D.H. 9's flying from Otranto, and several other operations in Egypt, Palestine, &c. Why should the air officer be precluded for ever from having the superior command of such operations. The same was true of submarine detection. It was possible that in the event of a future conflict they might have a patrolled band of the sea, say, from England to Egypt, never out of sight of an airman. Why should not the Navy yield the superior command, in a case like that, to the officer who really carried the responsibility and was responsible for the success of the work? At the Battle of Jutland there was only one seaplane in the air, and at the same time in France there were 450 machines actually flying. He asked the First Lord not to shut the door on the possibility of a superior aerial command.

Viscount Curzon said the Navy dreaded the suggestion of a Minister of Defence. They really wanted the Committee of Imperial Defence resuscitated, together with a properly constituted staff, working in conjunction with the Navy, Army and Air Force. He ventured to suggest that the development of torpedo-dropping had not been so successful as General Seely had indicated. Last September he witnessed some gunnery practice carried out in the Moray Firth. All the spotting was done by an aeroplane flying about 6,000 ft. high some miles away, and it was supposed to be one of the finest shoots ever carried out by the Navy at long range. Visibility was so bad that the target was practically indiscernible by the ships firing at it.

Lieut.-Col. Malone said that as to the question of a Ministry of Defence, if it was really the opinion of all the experts to place the three services under a single Minister, he did not see any very great argument against that. From the point of view of efficiency and economy to place the three Departments in closer relationship would be all to the good. They could not get real co-ordination by the senior officers simply meeting and discussing a number of principles. If there was to be co-ordination between the three fighting services, they must arrange that the staffs shall arrange to work out the details and thrash out the whole operations and policy together. Possibly the Admiralty planning division, and similar analogous departments of the War Office and the Air Ministry, could be assimilated in one Department, which would provide a means of linking up the three Services. He also asked what steps were being taken with regard to co-ordination of staff officers at the different colleges. There were two air officers at Camberley, and he asked how many were at Greenwich and Portsmouth naval colleges.

Mr. Long said that the arrangement by which the Secretary for War acted as Secretary for Air had been worked fairly and honourably by all concerned. They believed that they would find means by which the Air Force would work with the other two great fighting departments satisfactorily to the State and appreciably to the general interest.

The House divided and rejected the Amendment by 18 to 194. The Vote was then passed.

H.P. Paris and Brussels Air Services

ON the Handley Page Continental air services between September 2, 1919, and March 12, 1920, inclusive, 1,078 passengers and 54,690 lbs. of freight have been carried over a distance of 79,049 miles.

Tragedy of the Sahara

DEFINITE news was received on March 22 of the death of Gen. Laperrine, who left Tamanrasset (Algerian Sahara) on February 18 to fly to Timbuctoo. Whilst patrolling south of Tin-Zaouaten, Lieut. Pruvot sighted a wreck which proved to be that of the missing machine. Sergt.-Maj. Bernard and Mechanic Wasselin were alive but completely exhausted, but Gen. Laperrine died on March 5. He had broken his collar-bone and several ribs.

A French Lady Looper

MDLLE. BOLLAND, the young Frenchwoman who recently qualified for a flying certificate at the Caudron school at Le Crotoy, and then flew 125 miles in 80 minutes, on March 20 succeeded in looping three times on a Caudron C3.

French and Aviation in Argentina

GENERAL PÉTAVY and Prince Murat, representing certain French companies, have conferred with the Argentine Minister of Public Works as to the possibility of establishing new industries and air services in the Republic.

Flights Over the Andes

CAPT. PARODI, the Argentine airman, recently crossed and re-crossed the Andes, flying from Mendoza to Santiago and back without a landing. A later message says that Capt. Zanni had flown from Argentina to Santiago, where he landed, and back.

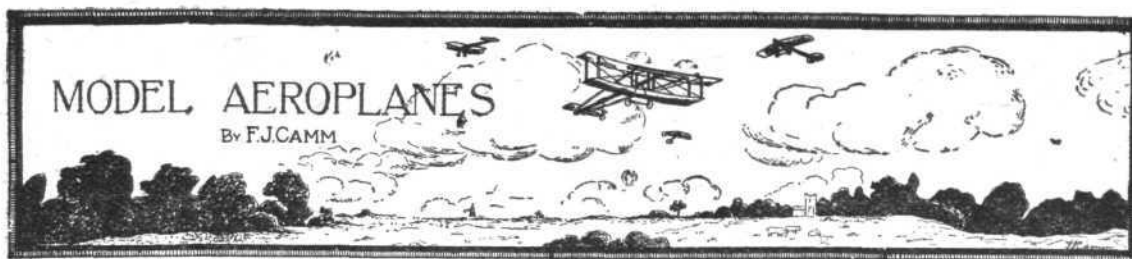
Colombia Seaplane Service

INFORMATION has been received from Curacao that in the course of this month a service of seaplanes between Barranquilla (Colombia) and Girardot will be inaugurated. The journeys will take nine hours, and short calls will be made at various towns. The service is for cargo and passengers.

A Zeppelin Flying Boat in Holland

A ZEPPELIN flying boat has arrived near Amsterdam from Friedrichshafen for a series of demonstrations, reports the *Daily Mail* correspondent at the former place. The flying boat made a trip above the North Sea, coming down frequently to the water.

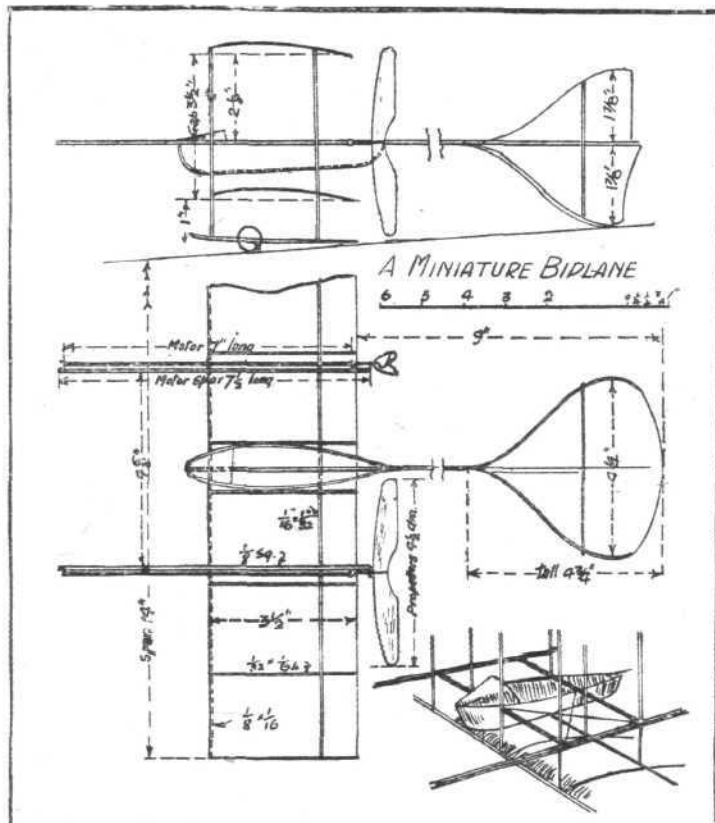
A feature of the boat is that it is built entirely of aluminium, except the wings which are covered with fabric. It is 13 ft. long, weighs 55 cwt., and is fitted with two 250 h.p. motors, giving the machine a speed of 109 miles. The cabin holds six passengers."



NOTE.—All communications should be addressed to the Model Editor.

A Miniature Biplane

I show herewith a design for a small biplane on lines somewhat different to existing design. The twin screws are mounted Farman-fashion behind the main planes, and a small boat-shaped fuselage lends an appearance of realism. The c.g. is adjusted by varying the position of the motor-

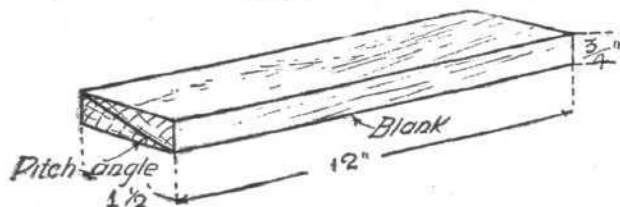


rod fore and aft. The three views render a description unnecessary—but it should be pointed out that the total weight should not exceed 3 ozs.

Provided the proportions are adhered to, a larger machine could, of course, be built on these lines. The machine is provided with a vane extending both above and below the centre line.

Airscrew Pitch

A SIMPLE method of calculating the pitch of a screw is to multiply the diameter by the thickness (see appended illustration) and the result by $3\frac{1}{2}$; the answer is the pitch.



For example, the block shown is 12 ins. \times $\frac{3}{4}$ in. by $1\frac{1}{2}$ ins., therefore the pitch will be—

$$\frac{22}{7} \times \frac{12}{1} \times \frac{3}{4} \times \frac{2}{3} = \frac{132}{7} = 18\frac{6}{7} \text{ ins. pitch.}$$

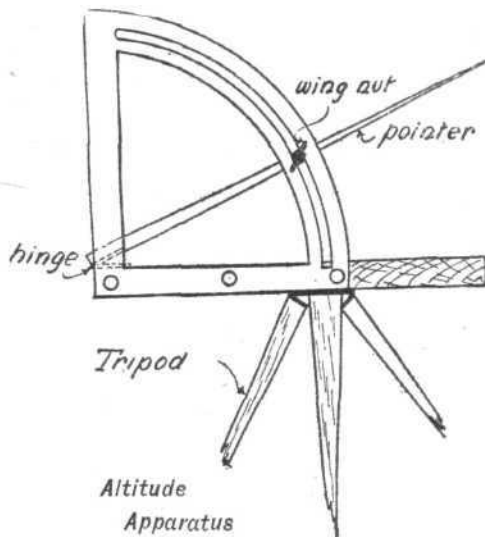
Measuring Altitude *

THE illustration shows a simple apparatus for measuring altitude. In principle it is similar to the theodolite, the instrument used in astronomical work and land surveying.

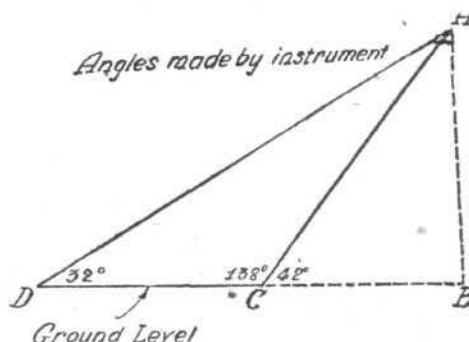
It consists, in fine, of a wooden base to which is attached a brass quadrant. To one end of the base a tapered wooden arm is hinged, the cross-section of which is $\frac{3}{4}$ in. \times $\frac{1}{2}$ in. It is tapered along the top and two sides to a sharp point, the

bottom edge being left untouched, as the angle is taken from this. The arm is locked to any desired position by means of a wing-nut, which passes through the arm and runs in a slot in the quadrant. The apparatus is secured to a tripod or camera-stand. Two such instruments will be necessary, and they should be spaced a known distance apart—the greater the distance the more accurate the result.

Care must be exercised to ensure that the base to which the quadrant is attached is horizontal, otherwise the angle



registered will be inaccurate. Suppose that the two instruments are spaced 200 yards apart, and that it is desired to determine the altitude at which a model is flying. One person should be stationed at each instrument, and the model arranged to be launched so that it passes the apparatus at its greatest altitude. A few test flights will enable the distance from the apparatus at which the model must be launched to be found. Directly the model approaches the imaginary line connecting the two points at which the instruments are stationed, the operators should simultaneously (at, say, the wave of a flag from a third party) register the angle and lock it by means of the wing-nut. It is now possible



by means of a scale drawing to find the altitude of the model. A base line is drawn to scale representing the 200 yards, and the angles plotted from each end. The vertical height from the intersecting points represents the height of the model, or it may be calculated trigonometrically. Suppose the two angles to be as in the illustration, then—

$$\begin{aligned} DB &= AB \cot. 32. \\ CB &= AB \cot. 42. \\ CD &= DB - CB. \\ &= AB \cot. 32 - AB \cot. 42. \\ &= AB (\cot. 32 - \cot. 42). \\ 200 &= AB (1.6003 - 1.1106). \end{aligned}$$

$$\therefore AB = \frac{200}{1.6003 - 1.1106} = \frac{200}{.4897} = 408 \text{ ft.}$$

SIDEWINDS

TWO THOUSAND bicycles a week is now the output of the great Raleigh factory at Nottingham, where the workpeople are putting their backs into production. We understand that even this output is insufficient to meet the Raleigh demand, and the order-books are full far ahead, and it should be noted that all these are high-grade machines.

A VERY fine booklet has just been issued by the Sunbeam Motor Car Co., Ltd., giving full particulars of the various aircraft engines built by the firm. It includes photos of the Dyak, Arab, Maori, Manitou, Cossack, Matabele, Sikh (six and 12-cylinder types) Sunbeam engines which have been developed for aeroplane and airship work and details are briefly given of each engine. There are also one or two photos of the R 34, which it may be recalled had engines of "Maori 4" model, and that they successfully drove the airship to the United States and back. The R 33 was similarly equipped, while the R 36, R 37 and R 39 are to have Sunbeam "Cossack" engines.

QUITE an interesting booklet—and a specimen of tasteful printing, by the way—is one entitled "Public Opinion on the New Armstrong-Siddeley Six-Cylindered Car." Anyone of our readers who would like a copy should make application to the London showrooms of Messrs. Armstrong-Siddeley Motors, Ltd., at 10, Old Bond Street, W. 1, or the headquarters of the company at Coventry.

THE annual dinner of the staffs of both A. W. Gamage, Ltd., and Benetfinks, held at the Connaught Rooms, on Monday last, proved a tremendous success, that it was necessary to hold an overflow banquet. Mr. A. W. Gamage occupied the chair, supported by his co-directors, and in responding to the toast of "The Firm," paid eloquent tribute to the assiduity and loyalty of everyone in doing their utmost to bring about such a successful year's trading as had proved beyond his wildest dreams. Mr. Eric Gamage, in proposing the health of the staff, announced the fact that the usual bonus (which had been richly earned) would again be very shortly paid to the staff. During the evening a handsome presentation was made to the chairman and directors, on behalf of the members who went to the War, as a token of appreciation of the treatment they had received at the hands of the directors.

The band of the Coldstream Guards contributed some very pleasing selections during dinner, which were much appreciated. An excellent musical programme and dance concluded the evening's festivities.

THE Cairo to the Cape flight has added to the K.L.G. laurels, the Rolls-Royce engines used by Col. van Ryneveld having been equipped with K.L.G. plugs, which gave every satisfaction.

FROM the Central Aircraft Co., 179, High Road, Kilburn, comes a useful little folder setting out a variety of trips which can be taken on C.A.C. machines from the Northolt aerodrome. They include a flight round Harrow for £1 2s. 6d., a flip over London for £2 3s. 6d., or a tour round South Wales from London for £40. The other trips already arranged include a three-hour tour round London, £17 10s.; a flight up the Thames Valley, £12 10s.; a trip round Kent, £40; and a round of the cathedral cities, £30. In addition to these and other arrangements for flights in England, it is possible to make a tour of the Belgian battlefields for £60 per passenger, while a four-day inspection of the American front costs £120. We understand that quite good business has already been done in advance bookings.

Index and Title Page for Vol. XI

The 8-page Index for Vol. XI of "FLIGHT" (January to December, 1919) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1s. 2d. per copy, post free.

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xxvi, xxvii and xxviii).

PUBLICATIONS RECEIVED

Rolls-Royce Bulletin. February, 1920. Rolls-Royce, Ltd., 14-15, Conduit Street, London, W. 1.

Memorandum on Solid Lubricants. Bulletin No. 4. Department of Scientific and Industrial Research, 16-18, Old Queen Street, Westminster, S.W. 1.

Business. No. 4, Vol. 3. A. J. Greenly, 37-38, Strand, W.C. 2.

Cours d'Aerodynamique Pratique. By A. Courquin and G. Serre. Paris: Gauthier-Villars et Cie., Quai des Grands-Augustins, 55. Price 6 fr.

Aerial Transport. By G. Holt Thomas. London: Hodder and Stoughton, Ltd. Price 30s. net.

G.N.U. Service. The G.N.U. Motor and Accessories Co., 111, Westbourne Grove, W. 2.

Report No. 28. An introduction to the Study of the Laws of Air Resistance of Aerofoils. The National Advisory Committee for Aeronautics, Navy Building, 17th and B Streets, N.W., Washington, D.C., U.S.A.

NEW COMPANIES REGISTERED

HARDWOOD AND PLYWOOD, LTD., 29, Mark Lane, E.C.—Capital £10,000, in £1 shares. Plywood, hardwood and timber merchants, sawmill proprietors, etc.

C. G. SPENCER AND SONS, LTD.—Capital £20,000, in £1 shares. Aeronautical engineers, manufacturers of aircraft, motors, bodies, etc. First directors: A. C. Spencer, A. T. Spencer, Lilian T. Spencer, E. Allen and A. C. Crane. Solicitors, Engall and Crane, 44, Bedford Row, W.C.

AERONAUTICAL PATENTS PUBLISHED

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors

APPLIED FOR IN 1916

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published March 25, 1920

14,931. BARR AND STROUD, LTD., A. BARR and W. STROUD. Instruments for measuring vertical heights of aerial targets, etc. (139,224.)

APPLIED FOR IN 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published March 25, 1920

2,928. RADIO CONTROLLER CORPORATION. Stabilizers. (139,228.)

4,593. F. H. PAGE. Aeroplanes. (139,230.)

19,249. J. W. RAPP. Aeroplane ribs. (120,929.)

APPLIED FOR IN 1919

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published March 25, 1920

4,457. BLACKBURN AEROPLANE AND MOTOR CO. and H. BOOTH. Means for carrying mails, etc., on aircraft. (139,295.)

8,325. VICKERS, LTD., and SIR J. McKECHNIE. Wings and tail planes (139,333.)

8,423. W. J. MYATT and W. J. MYATT AND CO. Turnbuckles, etc. (139,334.)

13,217. GALLAUDET AIRCRAFT CORPORATION. Aeroplanes. (127,576.)

13,309. J. STERRITT. Aircraft. (139,376.)

27,265. SOC. DES MOTEURS SALMON. Magneto cover. (139,440.)

NOTICE TO ADVERTISERS

All Advertisement Copy and Blocks must be delivered at the Offices of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, not later than 12 o'clock on Saturday in each week for the following week's issue.

FLIGHT

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.

Telegraphic address: Truditur, Westcent, London.

Telephone: Gerrard 1828.

SUBSCRIPTION RATES

"FLIGHT" will be forwarded, post free, at the following rates:—

UNITED KINGDOM			ABROAD*		
	s.	d.		s.	d.
3 Months, Post Free..	7	1	3 Months, Post Free..	8	3
6 " " " " " "	14	1	6 " " " " " "	16	6
12 " " " " " "	28	2	12 " " " " " "	33	0

These rates are subject to any alteration found necessary under war conditions.

* European subscriptions must be remitted in British currency.

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C. 2, and crossed London County and Westminster Bank, otherwise no responsibility will be accepted.

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.